DOCUMENT RESUME

ED 427 570 HE 031 761

AUTHOR Higham, J. Russell, III
TITLE Explaining Trends in Interstate Higher Education Finance: 1977 to 1996. ASHE Annual Meeting Paper.
PUB DATE 1998-11-00
NOTE 63p.; Paper presented at the Annual Meeting of the Association for the Study of Higher Education (23rd, Miami, FL, November 5-8, 1998).
PUB TYPE Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Court Litigation; *Educational Finance; *Educational Trends; Elementary Secondary Education; Enrollment; Expenditures; *Higher Education; Income; Public Support; *State Aid; State Courts
IDENTIFIERS *ASHE Annual Meeting

ABSTRACT

This study examined state trends in higher education finance over the 20-year period from 1977 to 1996. Data on state higher education appropriations were obtained from the Grapevine database, while additional data on population, personal income, and college enrollment were obtained from the Bureau of the Census and the National Center for Education Statistics. It was found that 20 states had linear and 28 states had cubic distributions of per capita higher education appropriations from 1977 to 1996, verifying the belief that the ultimate decision on bottom-line, annual, state higher education appropriations is frequently the result of gubernatorial and legislative compromises that ultimately result in incremental increases that keep pace with inflation. Only six states experienced positive-slope trend lines related to the 20-year relationship of per capita higher education appropriations to per capita personal income, pointing to the need for higher education to continue its re-examination of mission and purpose and to halt on-going erosion of public support for higher education. It was also found that the ability of states to make public elementary and secondary education more fiscally equitable has had a positive influence on higher education funding. (Contains 15 tables, 18 figures, and 39 references.) (MDM)

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1998 ASHE Conference Research/Scholarly Paper

"Explaining Trends in Interstate Higher Education Finance: 1977 to 1996"

J. Russell Higham, III / Assistant Professor
Department of Educational Leadership and Counseling / Director, Center for Education Finance and Law
Murray State University
(Office) 502/762-6467; (FAX) 502/762-3799
E-mail Address: *russ.higham@coe.murraystate.edu*

September 29, 1998

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This paper was presented at the annual meeting of the Association for the Study of Higher Education held in Miami, Florida, November 5-8, 1998. This paper was reviewed by ASHE and was judged to be of high quality and of interest to others concerned with higher education. It has therefore been selected to be included in the ERIC collection of ASHE conference papers.

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J. Russell Higham, III / Assistant Professor
Department of Educational Leadership and Counseling / Director, Center for Education Finance and Law
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E-mail Address: *russ.higham@coe.murraystate.edu*

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Objective

The purpose of this study was to identify, analyze, and compare various trends in interstate higher education tax appropriation finance within a 20-year period from 1977 to 1996. Specifically, this study examined the following issues over time: (a) trends in individual state per capita higher education appropriations; (b) trends in per capita higher education appropriations relative to per capita personal income; (c) trends in higher education appropriations relative to full-time equivalent (FTE) student enrollment; (d) differences in per capita higher education appropriation percent changes among the four predominant groups of higher education governance structures (i.e., consolidated governing boards [two groups] and regulatory coordinating boards[two groups]); and (e) differences in per capita higher education appropriation percent changes among the six types of K-12 litigation decisions (i.e., legal cases that involve the contesting of the constitutionality of individual state public school finance systems).

Perspective

Introduction

Although tax appropriations and other factors such as tuition, grants and contracts, gifts and alumni giving, and endowment income all play important roles in financing state higher education, it is still acknowledged that state tax appropriations remain the most integral piece of the annual higher education funding pie. Increased funding demand for other major state responsibilities such as K-12 education, public welfare aid, prison system development, and highway system improvements have influenced annual appropriations to higher education over time. Furthermore, this increased competition

for state funding and growing demands by taxpayers and legislators for improving accountability and productivity has pressured higher education to restructure, reengineer, and refocus its efforts. Analyzing the strength of relationship between and among state tax appropriations and the aforementioned issues will hopefully provide a quantitative explanation to what has often been identified as a *political* process.

An Historical Perspective of the Issues in this Study

Higher Education Finance Issues in the 1970s, 80s, and 90s. The decade of the 1970s was typified by the erratic growth of inflation, continued increases in student populations, steady growth in program diversity, and a rapid increase in the number of social programs requiring state funding. Because of the enormity of these growth trends, many of which carried over from the previous decade, legislative and postsecondary leaders made strong pleas to their respective state governments to continue the 10-to-12 percent annual increases in higher education funding experienced in previous years in order to maintain low student tuition and fees and continued open access for middle- and lower-income families. By the mid 1970s, the status and future of higher education was best summarized by Allan W. Ostar, executive director of the American Association of State Colleges and Universities: "Low tuition public higher education, which now enrolls about 75 percent of all American college students, is the envy and wonder of the world, just like our public school system, of which it is an outgrowth. It has contributed enormously to our progress and well-being as a nation. There is no reason for abandoning it now" (Chambers, 1973, p. 4).

Other emerging higher education finance trends in the mid-1970s saw gubernatorial and legislative actions leveraged for increasing student aid that occurred at the expense of support to institutions, and although state funds remained the foundation of operational and instructional support, higher education began to increasingly rely on increased federal assistance to support research. Due to this increased competition for state funding, institutions also increased their solicitation of private gift donations to support growing institutional budgets. The state of affairs in higher education during the 1970s could be evaluated in both positive and negative terms. In the positive sense, overall public confidence remained high with many proponents still considering higher education to be "a durable and leading element of the American dream," and called for its continued, unprecedented support (Chambers,

1975, p. 3). The 50-state higher education appropriation picture revealed modest but steady improvement, with overall two-year rates of gain ranging from 22% (in FY1978-79) to 29% (in FY1974-75) that still outweighed the rising rate of inflation (Chambers, 1978). During this same time, financial support to community colleges was increasing because of improved curricular diversity and the rapid growth in high-priced tuition at private and four-year state institutions.

From the negative perspective, a significant increase of rising instructional costs was consumer-borne. Tuition increases were implemented to offset the declining rates of growth in higher education state funding. Major state university funding was down for 64 of 94 institutions (68%) when comparing institutional two-year gains with those of their respective states (Chambers, 1977). Fiscal pressure to continue providing improved public services impaired many states from adequately funding higher education. Other major implications affecting postsecondary funding in the late 1970s that would proceed into the next decade included the decline of the national birth rate, fewer individuals comprised the 'traditional college age' cohort, and an aging national population that limited the availability of tax dollars (Schmidtlein & Popovich, 1978). Schmidtlein and Popovich (1978) also predicted that two dilemmas would confront higher education as enrollment-driven revenues for many institutions started to level or decline: new bases for justifying budget increases would be needed; and migration and population growth patterns would result in some campuses growing, some remaining stable, and others diminishing in size, with the possibility of all three actions occurring within the same state. Although financial pressures continued to squeeze state governments, the 1970s ended with stabilized levels of state support to provide many students with the opportunity to receive the benefits of higher education. However, more pessimistic views regarding the economic value of higher education and the production of advanced degrees were emerging social trends that would affect future higher education finance.

The major expansion of higher education that was initiated in the 1960s was largely completed during the 1980s. Furthermore, the education reform movement, initiated in 1982 for elementary and secondary education, had also involved higher education by the mid-1980s. Specific higher education areas targeted in this reform were "undergraduate education, clarification of the mission and purpose of individual colleges and universities, and linkage of higher education to economic development, job

training or retraining, and technology" (Hines, 1986, p. 5). With higher education entering an era in which the quality of educational services was being more critically scrutinized, state spending for elementary and secondary education "fared considerably better than spending for higher education, with spending for K-12 growing faster than general fund spending in 26 states in 1986" (NCSL, 1986, p. 28).

The early 1980s noted a significant increase in the cost of operating colleges and universities. Factors responsible for this increase were the doubling of the purchase price of goods and services regularly utilized by campuses, increased energy costs, an on-going national recession, and the election of a conservative national administration. Nationally, higher education appropriation trends were experiencing a modest growth period compared to the formative mid-1970s. However, by FY1981-82, a small number of states had experienced several years of mid-year rescissions in annual appropriations due to the reallocation to other public services, recessionary economies, and cut-backs in federal support. Of paramount importance, many education leaders felt that higher education was in danger of losing its lofty position as one of the priorities of state funding.

The smallest two-year gain in higher education appropriations for nearly a quarter-century occurred in FY1983-84. Coupled with a rising consumer price index, this meager increase of 11% forced higher education administrators to delay or cancel plans for needed facility renovations and maintenance projects in order that institutional operating expenses be held at controllable levels. Other mid-1980 factors that accounted for this small two-year gain were several national and state problems including high unemployment, excessive interest rates, and the waning condition of several major industries including agriculture, automotives, housing, and steel. Longanecker (1986) stated that early and mid-1980 postsecondary education financing pressures emanated from "escalating costs, diminished federal support of higher education, changing demographics, and rapidly shifting manpower needs" (p. 6).

The late 1980s were characterized by annual appropriations specifically targeted for distinct categorical purposes in higher education including "spending increases for economic development, job training including teacher training, technology, student aid, minority access, and incentive funding for excellence and measurable productivity gains" (Hines, 1986, p. 6). Fiscal Year 1986-87 initiated a pronounced movement in some states from previously used formula-based, enrollment-driven funding

systems to 'base plus priority incentive funding systems' (Zemsky & Massey, 1990) that ushered in an era characterized by resource allocation, sharpening institutional missions and outcomes, and improving quality. Most characteristic of this trend was the issuance of incentive increases for developmental academic programs designed to accomplish objectives that could be measured and related to larger state purposes.

This decade continued to feature federal government involvement in higher education, but more as a partner with state governments rather than its major provider. In this new role, the federal government concentrated its fiscal efforts in the provision of increased student aid and grants for research and development. Although the aforementioned trends could be considered positive, negative trends also emerged. "Most criticisms of states in the [mid-to-late] 1980s focused on the influence of decreases in appropriations and increases in prices. The shift in burden for financing public higher education was from states to students and their families, a consequence of the decline in state support, and was increasingly an issue of concern to national groups examining responsibilities for financing higher education" (St. John, 1994, p. 27).

"During the 1980s, the growth rate of state appropriations for higher education was slightly less than the growth rate for state revenues" (Andersen, 1994, p. 1). In reaction to the long-range consequences of this trend, Johnstone (1990) indicated that states would begin to take more notice and react more positively to institutional decries for increased appropriation funding "only until the damage to public higher education is more apparent and seems to matter more to the electorate. Until then, we must maintain both access and quality in public higher education, and must tell our story better" (p. 1). In retrospect, fiscal incrementalism continued from the 1970s through the 1980s, albeit more limited in the latter decade. "Regarding the optimum proportional allocation of state subsidies for higher education among general institutional support, categorical aid, and student aid, as well as regarding how high student tuition and fees should be, the [predominant] financing policy issues tend to be how large the incremental subsidy shall be and how it shall be allocated" (Leslie & Brinkman, 1988, p. 34). Furthermore, Johnstone (1990) indicated that in the meanwhile, the anticipated limitation (in comparison to former years) in incremental appropriation increases would cause many public higher education

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institutions to probably experience the non-replacement and non-renewal of faculty positions, faculty lay-offs or retrenchment, slowed administrative services, and frozen enrollments.

In the early 1990s, higher education experienced its first restriction in public funding primarily to a "shallow national economic recession" (Hauptman, 1993, p. 1). The national recession that began in 1990 restricted state appropriations for higher education to the point of realizing a decline nationally in current dollars from FY1990 to FY1991, the first experienced in higher education since appropriation documentation was initiated in FY1959-60 (Hines & Pruyne, 1992). Rapid tuition increases were common at many public postsecondary institutions, with private colleges and universities placing even greater financial pressure on already overextended middle class families bearing the brunt of high tuition costs.

The early years of the 1990s (1991 to 1993) served as a litmus test in highlighting new, major problems facing higher education. For many institutions, "the major problem is reduced funding, not reduced student demand" (El-Khawas, 1993, p. 25). This fiscal stagnation resulted in faculty attrition and a freeze on faculty salary compensation resulting in widespread reduction in faculty morale. As a result of this overall funding reduction, higher education was forced to more effectively utilize existing resources and to reprioritize the utilization and importance of programs and services. Many institutions began to more fully utilize tools such as outcomes assessment and program review to prudently plan for the future including increasing the number of academic programs geared to adult learners. In conclusion, the first half of the 1990s noted more state and local governments experiencing considerable financial stress. A majority of this stress was attributed to the following sources: the slow growth of the labor force and the existence of much less unemployed productive capacity than in the 1980s; intergovernmental competition for economic development intensifying in part because of the slowing economic growth; federal mandates adding to spending increases with federal aid not likely able to keep pace; the population aging adding to the costs of Medicaid and health services for retired employees; school enrollment moderately increased compared to the 1980s; court decisions resulting in adverse budget impacts; a rapid increase in medical care prices; and growing expenses experienced in fighting AIDS and the national and drug wars (Gold, 1991).

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Despite the limited growth of appropriations experienced in the early 1990s, evidence existed to prove that many colleges and universities were making concerted efforts to operate more efficiently. Redirection and reorganization became the defining themes in this effort. Administrative cutbacks and the development of academic programs and initiatives that take into consideration students' needs as well as related accountability issues are several of the changes indicative of an on-going alteration of higher education culture due to the continuation of tight financial times (El-Khawas, 1994). In an effort to compensate for the limited growth of state tax appropriations, institutions continue to be more dependent on tuition and other student charges. Furthermore, the survival of lightly-attended academic programs was becoming more contingent on their revenue-generating ability rather than longevity or reputation.

The rapid growth of other state government responsibilities have also played a vital role in restricting the growth of higher education funding in the 1990s. Increased funding to elementary and secondary education, health care, and prisons identified these areas as the primary benefactors in budget battles over state funding. Additionally, the projected decline in forthcoming college age populations make it difficult for states to justify increases in annual higher education allocations. With steep tuition increases confronting students and families, growing public concern was also expressed about how colleges were spending the money they received. One example of this concern involved the perception that colleges and universities were spending money on frivolous items such as the construction of recreational and cultural centers, and renovations to student housing. Another public perception was that increasing salaries were being allocated to researchers with lesser or non-existent teaching loads, while the increasing use of teaching assistants in lieu of professional instruction frequently made recognized research institutions targets of public criticism (Sykes, 1988).

As a result of these perceptions, many feel that colleges and universities need to rethink how they are doing business. Because the revenues and usual annual growth once depended upon for operation and expansion may not be as plentiful in the future, there exists a pervasive opinion that institutional change must be addressed with such topics as *productivity* and *restructuring*. In simple terms, more must be accomplished using less available resources in the most appropriate manner. Zemsky stated: "Three out

of four institutions are looking seriously at change due in large part because they have financial problems and just can't continue doing business as usual" (Callan, 1995, p. 2).

Higher education administrators and academicians appear to be mired in a situation in which legislator and public expectations are for them to increase educational quality and show quantifiable evidence of such improvement, while providing comparably less funding (in constant dollars) than in previous years. "The problem for state educational policymakers is that we have reached a point in history where higher education has become viewed as a universal right at the very time when rising costs of higher education and state and federal budget constraints appear unable to support the expectations of the American public" (Hossler et al, 1994, p. 34).

Higher Education Appropriations and Enrollments. During the 1970s, there existed in higher education a generally accepted corollary that assumed that *if enrollments increase, state funding increases; if enrollments remain steady, then funding will remain constant; and if enrollments decline, state appropriations will likely fall* (Leslie & Ramey, 1986). However, many changes have since occurred to cause reexamination of the appropriations-enrollment relationship.

Within higher education literature, many theories have been proposed to explain the state spending-enrollment relationship. One approach (Quigley & Rubinfeld, 1993) involved human capital and mobility. In short, states hope to import valuable human capital by providing high levels of funding and enrollment opportunities. Furthermore, states predicted that many public institution graduates would choose to reside within their respective state boundaries after graduation.

Another explanation (Quigley & Rubinfeld, 1993) concentrated on the political benefits associated with the provision of higher education and subsequent funding. According to this view, politicians use *logrolling* techniques to barter for forms of public higher education that benefit their constituencies. California's increased emphasis in community college education is consistent with this view in that a large number of two-year and vocational institutions were created in many legislative districts to make a statewide educational package politically acceptable. A third perspective, articulated by Bowles and Gintis (1976), explained that subsides to higher education are a means by which the

capitalist class distributes state resources to the middle class, thereby keeping the working class 'in their place' with educational opportunities at two-year institutions.

During the growth decades of the 1960s and 1970s, "state support for public higher education (as a percentage of total personal income which is a rough measure of 'burden') [was] enrollment-driven (The Carnegie Foundation, 1976, p. 29). From the conclusion of World War II through the mid-1970s, state support experienced steady growth. Additionally, private support during this time period was also enrollment-driven, but did not increase nearly as fast as the state share in terms of percentage of personal income. Furthermore, the growth of federal support of public higher education during this prosperous time was more formidable than the growth of state and private sources of support. Federal support was especially beneficial during this time period by continuing a progressive program of student financial aid that continued a policy of 'open' student access by offsetting rising tuition costs, thereby indirectly supporting the fiscal environments of many state postsecondary institutions.

"Between 1979 and 1984, instructional costs per student did not increase at all in real terms and per student resources devoted to instruction remained constant. This 'miracle' was achieved by keeping faculty wages down" (Froomkin, 1990, p. 206). A generally accepted summary of the 1980s could be: "the expected contraction of enrollments, two to four percent per year, and the consequent decline in tuition revenue and possibly state support, which is often calculated on a per-student basis," were likely to affect institutional budgets in a similar fashion to the effect of a national economic slow down (Froomkin, 1990, p. 211). Both factors characteristically limited the previously unencumbered growth of higher education services that were prosperous in the 1970s.

Had it not been for the federal government maintaining research and development funding at a high level during this time, many higher education institutions would have experienced much harder financial times. Many institutional budgets were balanced at the expense of faculty compensation, while other institutional functions such as construction, renovation, and maintenance were either delayed or canceled. Reminiscent of a more common trend in the 1990s, institutions began to protect the bulk of their instructional programs by "shifting resources from declining programs to new, emerging fields, mostly in the hard sciences" (Froomkin, 1990, p. 210). Although the most prestigious and research

oriented institutions were generally believed to have a decided advantage regarding competition for federal funds during tight fiscal times, "it is not certain that this advantage will hold during a prolonged period of decline in enrollments" (Froomkin, 1990, p. 213). Other circumstances that have the potential of weakening flagship institutions include "a prolonged depression, federal fiscal austerity translated into cuts for research and development funds, and decreased attractiveness of academic programs due to aging and disgruntled faculty" (Froomkin, 1990, p. 213). Although these circumstances appear unique to one another, they exhibit the common characteristic of being mutually inclusive; that is, if one occurs, one or more will likely follow that negatively impacts higher education appropriations.

It is generally agreed that declining enrollments will affect higher education institutions in different ways. During the 1990s, institutions projected to be most vulnerable included: "institutions in states where the number of 18-to-21 year-olds has declined most, i.e. states in the Northeast and the upper Midwest; nonselective institutions which do not have much prestige; and smaller, isolated, liberal arts colleges (Froomkin, 1990, p. 211). Institutional planners hesitate to forecast declining enrollments for fear of receiving the treatment usually given the messenger who brings bad news. Postsecondary institutions that have experienced reduced funding resources but have remained most solvent and successful appear to have incorporated one or both of the following: strategic planning and/or an emphasis toward the sciences. The former practice involves evaluation of programmatic strengths and weaknesses in the area of student demand, faculty productivity, and centrality of institutional mission (Shirley, 1982). The latter requires a commitment for considerable resources in engineering and the sciences in an effort to establish a national recognition resulting in the attraction of outstanding undergraduate and graduate students as well as federal and corporate funding (Brinkman, 1990).

Although there has existed a push to have greater involvement of society's underrepresented participating in higher education, the current squeeze on annual state tax appropriations and the steady rise of tuition costs are financially frightening away many lower socioeconomic students. Also, considerable concern was previously expressed for "the decline in one measure of the college enrollment rate for black and Hispanic high school graduates since the mid-1970s, and there is also evidence that college completion rates have declined markedly from the early 1970s to the mid-1980s" (Clotfelter &

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Rothschild, 1993, p. 5). These social factors have considerable impact on trends in higher education appropriations and enrollments.

State Governing and Coordinating Board Systems of Higher Education. From the outset of any discussion related to state involvement in higher education, it is important to distinguish between what is meant by governance and coordination. Public college and university governance can be defined as "how a state governs public institutions," while statewide coordination can be defined as "how the state provides, if at all, for coordination of the overall higher education or postsecondary system, including both public and private institutions" (McGuinness, Epper, & Arredondo, 1994, p. 2).

In presenting state government's contention for involvement in public secondary education, it is common knowledge that public institutions must, at the very least, seek annual funding from the state. It is also recognized that state interest in higher education goes far beyond funding provision. State interest in higher education also pertains to substantive goals, policies, and programs that an institution has chosen to pursue, to the procedural techniques selected to achieve the chosen goals, or to both. Regarding the appropriateness of state interest in higher education, "the problem is to determine which interferences by the state constitute necessary safeguards of the public interest, which constitute marginal safeguards of the public interest, and which constitute actual threats to the essential ingredients of autonomy, perhaps best described as the portion of our institutional life and development which is not within the bailiwick of anyone else to prescribe or control or even touch" (Gould, 1966, p. 5).

All states essentially assign the responsibility of operating their public colleges and universities to governing boards. These boards are most commonly referred to as 'boards of regents' and have responsibilities similar to non-profit organizations' boards of directors. These responsibilities typically include "appointing the campus chief executive; establishing policies and approving actions related to the faculty and other personnel; ensuring institutional fiscal integrity; and performing other policy and management functions" (McGuinness, Epper, & Arredondo, 1994, p. 2).

" 'Coordination' is the term used most often to describe the formal and informal approaches taken by states to handle the interconnections between the state and the higher education agency," especially as it deals with the annual allocation of state tax appropriations to higher education

(McGuinness, Epper, & Arredondo, 1994, p.3). Generically, coordination refers to the actions undertaken by agencies to manage this interconnection. Furthermore, coordination is the result of an array of mechanisms from governors' and legislators' actions to informal associations of institutions and their staffs, faculties and students. The participating players most frequently involved in this coordinating effort are "the state coordinating board, the governor's budget and policy staffs, a student financial assistance agency, an institutional licensing agency, the federally-required State Postsecondary Review Entity (SPRE), and a community college coordinating or regulatory agency" (McGuinness, Epper, & Arredondo, 1994, p. 3).

Regarding the classification of these state structures, present-day distinctions can be categorized as follows: consolidated governing board states and two coordinating board subdivisions, regulatory coordinating board states and advisory coordinating board states. The former of these coordinating boards is most commonly used by states. States identified as consolidated governing board states have assigned the responsibility for coordinating most or all higher education functions to a board whose primary responsibilities relate to governing the institutions under its jurisdiction. A consolidated governing board typically maintains the following responsibilities:

> heads a single corporate entity that encompasses all institutions within the system; carries out coordinating responsibilities in addition to its responsibilities for governing institutions under its jurisdiction; has the authority to develop and implement policy; advocates for the needs of the institutions to the legislature and governor; appoints, sets compensation for, and evaluates system and institutional chief executives; sets faculty personnel policies and usually approves tenure; has authority to allocate and reallocate resources between and among the institutions within its jurisdiction; and establishes policies for, and, in some cases, sets tuition and fees. (McGuinness, Epper, & Arredondo, 1994, p. 6.)

States identified as coordinating board states have assigned the responsibility for coordinating functions to a single board other than one of the governing boards. These states govern their institutions through single-institution boards, segmental boards, or some combination of these boards. In this case, institutional governance is relatively decentralized. Furthermore, coordinating boards can be subdivided into (1) regulatory coordinating boards, those boards that have the authority to approve academic programs generally indicating a greater degree of authority to regulate the substance of academic policy;

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and (2) advisory coordinating boards, those that have the authority only to review and make recommendations regarding academic programs to the institutional governing boards. A board's power and influence in these areas is less related to its formal authority than to its position of respect and to its reputation for objective, fair and open policymaking.

Currently, 23 states can be classified as consolidated governing board states. Twenty-five states can be classified as coordinating board states, 21 of which have regulatory boards and four which have advisory boards. Two states can be classified as planning agencies that have limited formal authority aside from performing state licensure or quality control functions and have been excluded from this study due to their small sample size. For the purpose of this study, the 23 consolidated governing board states and 20 of the 21 regulatory coordinating board states (one regulatory coordinating board state [New York] has no statutory budget role and was excluded) were further examined for percent differences in the growth of per capita appropriations over time according to type of state board authority.

The Effects of K-12 Constitutional Litigation on Higher Education Funding. Since the 1970s, over 70 individual pieces of litigation have been filed contesting the constitutionality of public finance systems in over 40 states (Hickrod et al, 1992). The paramount legal question proposed in these cases was to judicially determine if K-12 education is a fundamental state constitutional right or not. Affirmation of this question hopefully results in pressured gubernatorial and/or legislature action to lessen the disparity in per pupil education funding within the respective state K-12 units/districts. Although few states have been successful in affirming this question, Hickrod et al (1992) demonstrated that active K-12 litigation serves to stimulate subsequently higher levels of state and local public funding in comparison to bringing no litigation at all. This study also revealed that "finding education to be a fundamental right increases state funding and finding education not to be a fundamental right increases local funding" (Hickrod et al, 1992, p. 189).

Furthermore, the nature of the relevant research question in this study was to investigate the relationship of this K-12 public school finance litigation and the resulting percent changes in per capita higher education appropriations over time. Critics of constitutional litigation in the K-12 arena have alleged that successful litigation in K-12 education will reduce the funds available for postsecondary

public education, often referred to as the "Rob Peter to pay Paul" theory. Hickrod et al (1992) discovered the following results in a study that focused on the 20-year period 1970-1990 to specifically analyze the notion that plaintiff's successes may have been purchased, at lease partially, at the expense of higher education:

> State in Category I, where plaintiffs won, do have a meaningfully slower rate of growth [in postsecondary appropriations] than in states in which there has been no litigation. However, this may not be conclusive since Category II states—in which plaintiffs not only won, but compliance litigation was also filed—do not show as much suppression of growth in postsecondary appropriations per FTE student. Growth in postsecondary education appropriations per FTE is slightly favored in those states in which education has been declared to be a fundamental right, but the edge is probably not meaningful. In conclusion, the rate of growth of K-12 exceeded the rate of growth of postsecondary more in those states in which plaintiffs won, or even in which plaintiffs lost, than in those states in which litigation was never filed, thus supporting the previous finding that fiscal gains for K-12 may come at the expense of funding postsecondary education.
>
> (Hickrod et al, 1992, pp. 200, 203)

These results lend credence to the idea that a K-12 litigation victory can assist an entire state's educational budget.

Methodology

Sample

The sample for this study was composed of the 50 states.

Data Sets

Specifically, this study utilized individual state tax appropriation data for the 20-year period of 1977 to 1996. The major data base used in this analysis is the Grapevine, the research report of state higher education appropriations for the operating expenses of colleges and universities. Grapevine is nationally recognized as a valid, reliable, and frequently referenced data base and is considered a timely source of higher education fiscal information because the data are published as soon as possible after the initial legislative decisions are made in states in any particular year.

The related data used in this study were annual state census data from the U.S. Department of Commerce, Bureau of the Census; annual state personal income data from the U.S. Department of Commerce, Bureau of the Census and Bureau of Economic Analysis; and annual higher education full-

time equivalent (FTE) student enrollments from the U.S. Department of Education, National Center for Educational Statistics (NCES). Descriptive data used in the study include higher education governance structures from the Education Commission of the States (McGuinness, Epper, & Arredondo, 1994) and a "Boxscore" of litigation decisions regarding the constitutionality of individual state K-12 systems (Hickrod, Lenz & Minorini, 1996).

Variables

The following variables are included in this study:

A= Annual per capita higher education state tax appropriations;

I= Annual per capita personal income;

A/I= Annual higher education allocation per $1,000 personal income;

E= Annual full-time equivalent (FTE) higher education enrollments;

S= State higher education governance structures;

D= K-12 litigation decisions

Data Analysis

Statistical analyses were conducted on all five research questions using SPSS 7.5 for Windows, the Statistical Package for the Social Sciences, in Microsoft 95. The following were the methods and/or statistical analyses that were utilized in the study according to each of the research questions.

Research Question One. Research Question One (RQ1) was: *"For each of the 50 states, what are the trends in per capita higher education appropriations from 1977 to 1996?"* Regarding RQ1, individual scattergrams were derived for each state with time on the x axis and per capita higher education funding (A) on the y axis. The 50 individual state scattergrams were independently and then collectively evaluated qualitatively according to trend line patterns. The trends lines were then categorized as either *linear, logarithmic, quadratic,* or *cubic distributions.* From a quantitative perspective, an R^2 was then calculated for each state to determine the initial strength of linear relationship between the per capita and time variables. The qualitative and quantitative evaluations were subsequently compared to cross validate the appropriateness of the final model utilized to characterize each state.

Quantitative (or statistical) categorization of RQ1 (and RQ3) scattergram trend line patterns was achieved in the following arbitrary manner by the author. A state was considered to have a *linear distribution* if it was initially evaluated qualitatively as linear and if its initial linear R^2 was .960 or greater. If a state had an R^2 value of .959 or less in the initial test for linearity, further statistical tests were conducted to determine the "goodness of fit" (Ezekiel & Fox, 1963) of other potential distributions – either *logarithmic, quadratic*, or *cubic distributions*. If a state's subsequent statistical test resulted in an increase of one percent or more in its R^2 value *and* was similar in design to its corresponding mathematical model (Ezekiel & Fox, 1963), it was categorized as one of the aforementioned higher order polynomial distributions. Establishing an R^2 breakpoint of .960 relative to the initial test for linearity was used because it served as a decisive point of division for the states; e.g., in RQ1, 30 states had R^2 values under .960 (the R^2 range was from .035 to .958, with 25 of these states having initial R^2 values less than .950), while 20 states had R^2 values of .960 or greater (the R^2 range was from .960 to .992, with 17 of these states having initial R^2 values of .970 or greater). Furthermore, the term "best fit" was utilized by the author in order to statistically categorize each state relative to its most appropriate higher order polynomial distribution after satisfying the aforementioned criteria.

Research Question Two. Research Question Two (RQ2) was: *"For each state, what are trends in per capita higher education appropriations relative to per capita personal income from 1977 to 1996?"* Regarding RQ2, individual scattergrams were derived (same procedure as RQ1) with time on the x axis. The variable on the y axis was calculated by determining the ratio of per capita higher education appropriations (numerator) and per capita personal income (denominator) (designated as A/I). Because of the disparate results of the computer-generated scattergrams in RQ2, the states were categorized qualitatively into 11 groups based on the similarity of the 20-year trend line designs.

Research Question Three. Research Question Three (RQ3) was: *"For each state, what are the trends in per capita higher education appropriations relative to full-time equivalent (FTE) student enrollment from 1977 to 1996?"* Regarding RQ3, individual scattergrams were derived (using the same procedure as RQ1) for each state with time on the x axis and the ratio of state higher education appropriation funding (numerator) and total state higher education FTE enrollments (denominator)

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(designated as A/E) on the y axis. Overall, the scattergram categorization procedure used in RQ1, RQ2, and RQ3 incorporated expert validity to verify the placement of states within the analyses. Those participating in the categorization procedure (for RQ1 and RQ3) included Distinguished Professor Emeritus G. Alan Hickrod, former Director of Illinois State University's Center for Educational Finance, and Distinguished Professor Edward R. Hines, Director of Illinois State University's Center for Higher Education and Editor, Grapevine.

Research Question Four. Research Question Four (RQ4) was: *"For 43 of the 50 states, what are the differences in per capita higher education appropriation percent changes among the four predominant groups of higher education governance structures from 1977 to 1996?"* The four predominant groups included: *Group 1 GCB states*, each having one consolidated governing board for all public higher education institutions (10 states); *Group 2 CGB states*, each having one consolidated governing board for all senior institutions and a separate board for community colleges and technical institutions (13 states); *Group 3 RCB states*, each having a regulatory coordinating board with consolidated or aggregate budget responsibilities (nine states); and *Group 4 RCB states*, each having a regulatory coordinating board with budget review and recommendation responsibilities only (11 states). Relative to the 20-year time period of the study, a one-way analysis of variance (ANOVA) was performed to determine the differences among the governance groups pertaining to percent changes in per capita higher education appropriations. Regarding the ANOVA, governance type was treated as the independent variable (IV) (g=4). The 20-year percent change in per capita higher education appropriation funding was treated as the dependent variable (DV) (N=43). Furthermore, an analysis of covariance (ANCOVA) was performed to determine the differences among the means of the four governance groups relative to 20-year percent changes in per capita higher education appropriations controlling for changes in per capita personal income during the same time period.

(*Note:* Of the seven states excluded from this analysis, one state has a regulatory coordinating board with no statutory budget role (New York), four states have advisory coordinating boards (California, Minnesota, New Mexico and Pennsylvania), and two states utilize planning agencies (Delaware and Michigan).

Research Question Five. Research Question Five (RQ5) was: *"What are the differences in per capita higher education appropriation percent changes among the six types of K-12 litigation decisions from 1977 to 1996?"* Relative to categorizing the groups of K-12 litigation states, the *'Status of School Finance Constitutional Litigation'* typology devised by Hickrod, Lenz, and Minorini (1996) was used. The six litigation groups within the typology have been categorized in the following manner: Group 1 states are ones in which the plaintiffs won at the state supreme court level; Group 2 states are ones in which the plaintiffs won at the state supreme court level, but further compliance litigation was also filed; Group 3 states are ones in which the plaintiffs lost at the state supreme court level and there have been no further complaints filed or the further complaints also lost; Group 4 states are ones in which the plaintiffs lost at the state supreme court level, but there have been further complaints filed; Groups 5 states are ones in which litigation is present, but no supreme court decision has been rendered; and Group 6 states are ones in which no litigation is present or the cases are dormant.

Relative to the 20-year time period, a one-way analysis of variance (ANOVA) was performed in order to determine the differences among the means of the six groups of litigation decisions relative to percent changes in per capita higher education appropriations. For the ANOVA, the type of litigation decision was treated as the independent variable (IV) (g=6). The 20-year percent change in per capita higher education appropriations was treated as the dependent variable (DV) (N=50). Additionally, an analysis of covariance (ANCOVA) was performed to determine the differences among the means of the six litigation groups pertaining to percent changes in per capita higher education appropriations controlling for 20-year percent changes in per capita personal income during the same time period. Furthermore, two analyses of variance (ANOVAs) were performed to determine the difference between the means of the litigation winners (Groups 1 and 2) and litigation losers (Groups 3 and 4) pertaining to *immediate* (two years post-decision) and *short-term* (five years post-decision) percent change in per capita higher education appropriations.

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Results

Research Question 1.

Research Question 1 (RQ1) was: *"For each of the 50 states, what are the trends in per capita higher education appropriations from 1977 to 1996?"* Regarding RQ1, individual computer-generated scattergrams were designed for each state with time on the x axis and per capita higher education appropriations on the y axis. Furthermore, an R^2 was calculated for each state to initially determine quantitatively the strength of linear relationship between the per capita appropriations and time variables. In this research question, state higher education appropriations (A) was the dependent variable (DV), and time was the independent variable (IV). Initially, the 50 individual state scattergrams were categorized by individual and collective qualitative expert evaluation based on the homogeneity of trend line patterns. Within this qualitative evaluation procedure, the state trend line patterns were categorized as either *linear, logarithmic, quadratic,* or *cubic distributions.* The state trend lines were then statistically tested to determine a mathematical design "best fit" for the purpose of quantitative categorization. Furthermore, the same qualitative and statistical categorization procedure utilized in RQ1 was also used in RQ3.

Regarding the results of the initial qualitative expert evaluation and subsequent statistical evaluation of state per capita appropriations over time in RQ1, the following categories resulted. From a qualitative evaluation perspective, Group 1, the largest of the four groups relative to RQ1, involved 24 states (48%) having positive slope or linear-like distributions throughout all or nearly all of the 20-year period (Table 1). Due to this linear characteristic, these states were identified as *linear distribution states.* Of these 24 *linear distribution states,* 17 states (71%) experienced at least one-year declines in per capita higher education appropriations in the early 1990s due to a national recession, but a majority rebounded to resume annual linear increases. The remaining seven states (29%) were characterized by consistent annual linear increases in per capita higher education appropriations throughout the 20-year period. States which were categorized as qualitative Group 1 *linear distribution states* were Alabama, Arkansas, Delaware, Georgia, Idaho, Illinois, Iowa, Kansas, Kentucky, Michigan, Mississippi, Missouri, Nebraska, New Hampshire, New Jersey, New Mexico, North Carolina, Ohio, Pennsylvania, South Dakota, Tennessee, Utah, West Virginia, and Wisconsin.

From a quantitative perspective involving the statistical categorization of states according to per capita higher education appropriations over time, only 20 states (40%) were identified as *linear distribution states* having linear "best fit" R^2 values of .960 or greater (Table 2). States identified as quantitative Group 1 *linear distribution states* included Arkansas, Delaware, Georgia, Hawaii, Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Missouri, Nebraska, New Jersey, New Mexico, North Carolina, Pennsylvania, South Dakota, Utah, West Virginia, and Wisconsin. Only Alabama, Idaho, Mississippi, New Hampshire, Ohio, and Tennessee (subsequently statistically categorized as cubic distribution states) were absent from the original linear distribution qualitative evaluation, while Indiana was added to the quantitative Group 1 *linear distribution states* from its original logarithmic distribution qualitative evaluation.

Group 2, comprising the second largest of the four qualitative evaluation groups relative to RQ1, included 11 states (22%) that had positive, near-linear slopes through the 1980s, but concluded the 20-year period with near level per capita appropriations during the 1990s (Table 1). Of these 11 states, nine states (82%) concluded the 20-year period with a final year increase while two states (18%) concluded with a final year decrease. From the qualitative evaluation perspective, these state per capita higher education appropriation trend lines resembled mathematical logarithmic distributions and were identified as *logarithmic distribution states*. States categorized as qualitative Group 2 *logarithmic distribution states* included Arizona, Colorado, Hawaii, Indiana, Maine, Minnesota, North Dakota, Oklahoma, South Carolina, Washington, and Wyoming. From the statistical perspective, no states were categorized as quantitative Group 2 *logarithmic distribution states* due to having higher R^2 values relative to other models (Table 2).

Group 3, comprising the smallest group of qualitative evaluation states in RQ1, involved six states (12%) that reached a near-linear high in per capita appropriations, then experienced continuously declining post-peak annual per capita higher education appropriations (Table 1). These designs resembled quadratic distributions and were identified as *quadratic distribution states* (see Figure 6). States categorized as qualitative Group 3 *quadratic distribution states* included Alaska, Montana, Nevada, Oregon, Vermont, and Virginia. Of this group of six states, four states (67%) concluded the 20-year

period with a post-peak increase of at least one year while two states (33%) concluded with post-peak down-sloping decreases of at least four consecutive years. From a statistical perspective, only two states (four percent) were categorized as "best fit" quantitative Group 3 *quadratic distribution states* -- Alaska and Montana (Table 2).

From a qualitative perspective, Group 4 involved nine states (18%) that reached a linear-like high in per capita higher education appropriations, declined for two or more years, and then ascended toward or surpassed the previous peak (Table 1). These designs resembled cubic distributions and states included in this group were identified as *cubic distribution states* (Figure 7). Within Group 4, three states (33%) concluded the 20-year period with their highest per capita appropriations, two states (22%) surpassed their previous high but declined at or near the end of the 20-year period, three states (33%) finished with increases but did not attain their previous high, and one state (11%) approached the previous high only to decline in the last year. Group 4 scattergrams were the most variable with regard to per capita higher education appropriations over time. States categorized as qualitative Group 4 *cubic distribution states* were California, Connecticut, Florida, Louisiana, Maryland, Massachusetts, New York, Rhode Island, and Texas.

Group 4 *cubic distribution states* comprised the largest group of states (28 or 56%) after statistical categorization occurred (Table 2). This significant result can be attributed in large part to the early 1990s national recession which typically resulted in several years of per capita higher education appropriation decreases followed by several years of increases. This fluctuation disrupted the earlier linear nature of the scattergram designs and resulted in the creation of cubic distributions. States categorized as "best fit" quantitative Group 4 *cubic distribution states* included Alabama, Arizona, California, Colorado, Connecticut, Florida, Idaho, Louisiana, Maine, Maryland, Massachusetts, Minnesota, Mississippi, Nevada, New Hampshire, New York, North Dakota, Ohio, Oklahoma, Oregon, Rhode Island, South Carolina, Tennessee, Texas, Vermont, Virginia, Washington, and Wyoming.

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Table 1

Collective Qualitative Expert Categorization of Scattergrams Depicting Individual State Per Capita Higher Education Appropriations Over Time (1977 to 1996)

Linear Distributions *(24 states)*	*Logarithmic Distributions* *(11 states)*	*Quadratic Distributions* *(6 states)*	*Cubic Distributions* *(9 states)*
Alabama	Arizona	Alaska	California
Arkansas	Colorado	Montana	Connecticut
Delaware	Hawaii	Nevada	Florida
Georgia	Indiana	Oregon	Louisiana
Idaho	Maine	Vermont	Maryland
Illinois	Minnesota	Virginia	Massachusetts
Iowa	North Dakota		New York
Kansas	Oklahoma		Rhode Island
Kentucky	South Carolina		Texas
Michigan	Washington		
Mississippi	Wyoming		
Missouri			
Nebraska			
New Hampshire			
New Jersey			
New Mexico			
North Carolina			
Ohio			
Pennsylvania			
South Dakota			
Tennessee			
Utah			
West Virginia			
Wisconsin			

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Research Question 2.

Research Question 2 (RQ2) was: *"For each state, what are the trends in per capita higher education appropriations relative to per capita personal income from 1977 to 1996?"* Regarding RQ 2, individual scattergrams were designed for each state with time on the x axis and the ratio of per capita higher education appropriations (numerator) and per capita personal income (per $1000) (denominator) (designated as A/I) on the y axis. Regarding a discussion of the scattergram results for RQ2, the disparate nature of the computer-generated scattergrams precluded the use of the statistical categorization procedure utilized in RQ1 and RQ3. An important result of the RQ2 qualitative evaluation was the emergence of only six states (12%) having positive slope trend lines pertaining to the relationship of per capita higher education appropriations to per capita personal income over the 20-year period of the study. The critical significance of states having positive slope trend lines is the continued willingness of lawmakers to consistently fund higher education with available state tax revenues over time in lieu of governmental and public demands to place greater fiscal emphasis in other state responsibility areas such as elementary and secondary education, health care, public welfare, prison system development, and highway system improvements. Due to this characteristic, Group 1 states were identified as *positive slope states* (Figure 4). States categorized as Group 1 *positive slope states* included Arkansas, Iowa, New Mexico, Ohio, Oklahoma, and Wyoming.

Group 2 included four states (eight percent) having trend lines in which each state's per capita higher education appropriations/per capita personal income starting point was the peak followed by a continual exponential-like decline over the duration of the 20-year study (Figure 5). States in Group 2 included New Hampshire, South Dakota, Washington, and Wisconsin.

Group 3 included six states (12%) having trend lines in which each state's peak occurred at the start of the 20-year period followed by a steep decline with no recovery (Figure 6). States in Group 3 included New York, Oregon, Pennsylvania, Rhode Island, Vermont, and Virginia.

Group 4 included two states (four percent) having trend lines in which each state's peak occurred at the start of the 20-year period that was proceeded by the following longitudinal sequence: a decline,

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establishing a secondary peak, and concluding with a sharp decline (Figure 7). States in Group 4 included Indiana and Nebraska.

Group 5 included six states (12%) in which each state's peak of per capita higher education appropriations/per capita personal income occurred at the start of the 20-year period that was proceeded by the following longitudinal sequence: a decline, establishing a secondary peak, and a decline yet finishing with a one or more year increase (Figure 8). States in Group 5 included Connecticut, Florida, Missouri, Nevada, New Jersey, and West Virginia.

Group 6 was the largest of the qualitative RQ2 groups with 10 states (20%) in which each state's peak occurred at the start of the 20-year period that was proceeded by the following longitudinal sequence: a decline, establishing a secondary peak, and concluding with a decline (Figure 9). States in Group 6 included Arizona, Colorado, Idaho, Illinois, Kansas, Kentucky, Maryland, Michigan, Minnesota, and Utah.

Group 7 was the smallest of the qualitative RQ2 groups with only one state (two percent) which was characterized by a non-peak starting point that was proceeded by the following longitudinal sequence: increasing to a mid-point peak, and concluding with a continual decline (Figure 10). Alaska was the lone Group 7 state with a parabola-like trend line design pertaining to per capita higher education appropriations/per capita personal income over 20 years.

Group 8 included three states (six percent) in which each state had a non-peak starting point proceeded by the following longitudinal sequence: establishing a peak, and declining yet finishing with a one or more year increase (Figure 11). States in Group 8 included California, Georgia, and Mississippi.

Group 9 included two states (four percent) in which each state had a non-peak starting point proceeded by the following longitudinal sequence: establishing a peak, a decline, an increase, and concluding with a decline (Figure 12). States in Group 9 included Alabama and Massachusetts.

Group 10 was the second largest of the qualitative RQ2 groups with eight states (16%) characterized by each state having a non-peak starting point followed by establishing a peak and concluding with a decline (Figure 13). States in Group 10 included Delaware, Hawaii, Louisiana, Maine, Montana, North Carolina, South Carolina, and Texas.

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The last qualitative RQ2 group, Group 11, included two states (four percent) in which each state was characterized by multiple peaks and concluding with a sharp decline (Figure 14). State in Group 11 included North Dakota and Tennessee.

Because this research question addressed the willingness of lawmakers to consistently fund higher education based on available state revenue over time, the most fortuitous result would have been the emergence of a positive slope line in each state indicating that annual increases in per capita higher education appropriations were keeping pace with or exceeding annual increases in per capita personal income. Unfortunately, positive slope lines emerged in only six of the 50 states. States having positive slopes related to the ratio of per capita higher education appropriations over per capita personal income included Arkansas, Iowa, New Mexico, Ohio, Oklahoma, and Wyoming. The remaining 44 states had negative or down-sloping trends lines indicating that per capita higher education appropriations have not kept pace with available state revenue over the 20 years of the study. Furthermore, it can be reasonably assumed, as was speculated in the study's historical perspective, that the funding of other state responsibilities such as elementary and secondary education, health care, public welfare, prison system development and highway system improvements and other public concerns have taken precedence over the funding of postsecondary education in a majority of the states during the past 20 years.

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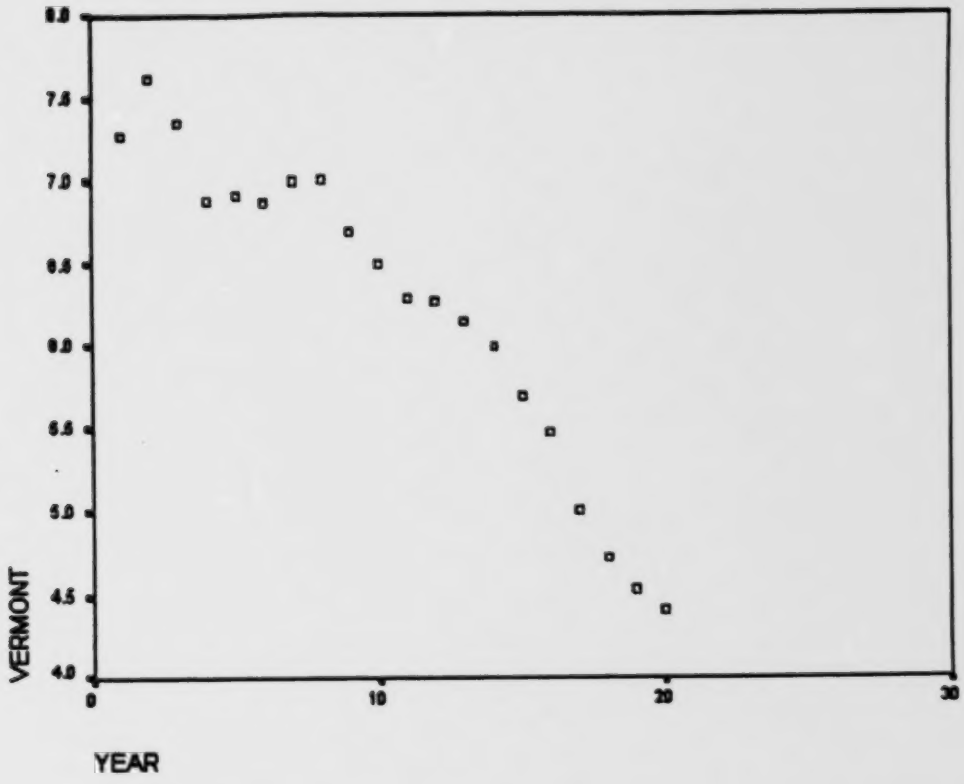

Figure 6. An example of a *Group 3* state pertaining to trends in per capita higher education appropriations relative to per capita personal income over time (1977 to 1996) relative to RQ2.
(Example: *Vermont*. Indices include: Ratio of per capita appropriations to per capita personal income on the y axis; time on the x axis)

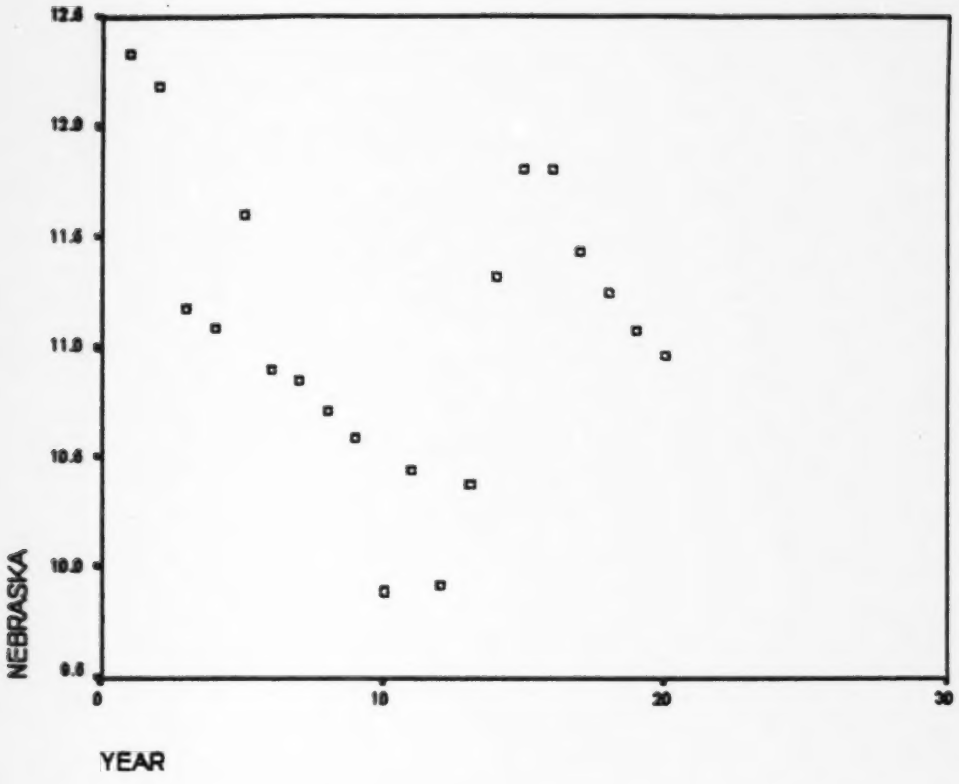

Figure 7. An example of a *Group 4* state pertaining to trends in per capita higher education appropriations relative to per capita personal income over time (1977 to 1996) relative to RQ2.
(Example: *Nebraska*. Indices include: Ratio of per capita appropriations to per capita personal income on the y axis; time on the x axis)

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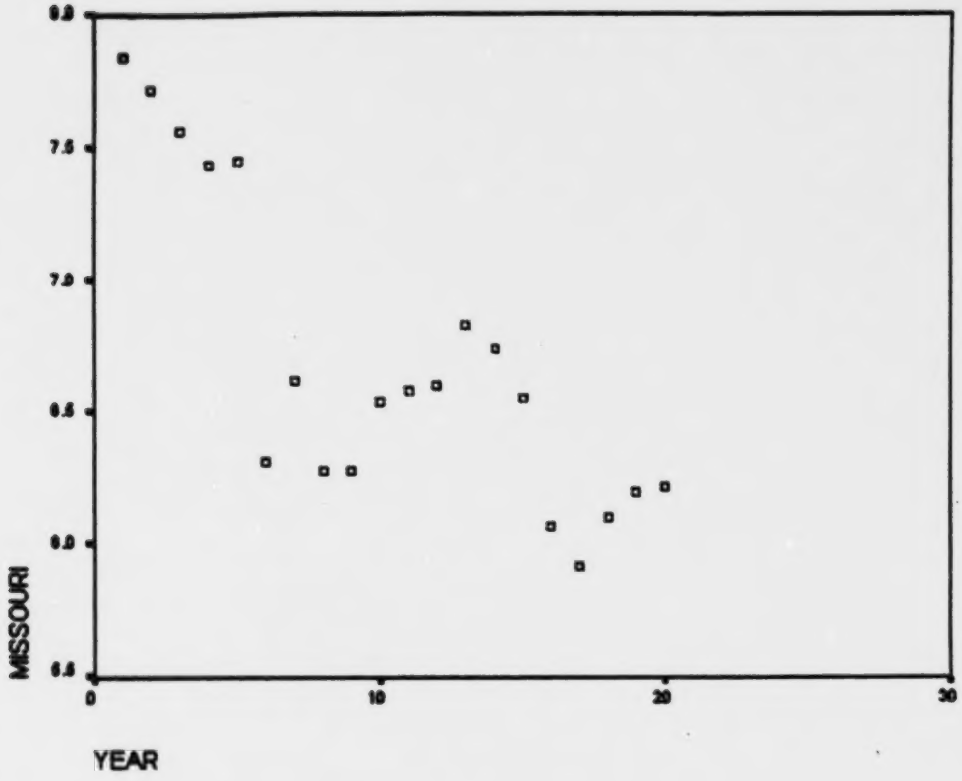

Figure 8. An example of a *Group 5* state pertaining to trends in per capita higher education appropriations relative to per capita personal income over time (1977 to 1996) relative to RQ2.
(Example: *Missouri*. Indices include: Ratio of per capita appropriations to per capita personal income on the y axis; time on the x axis)

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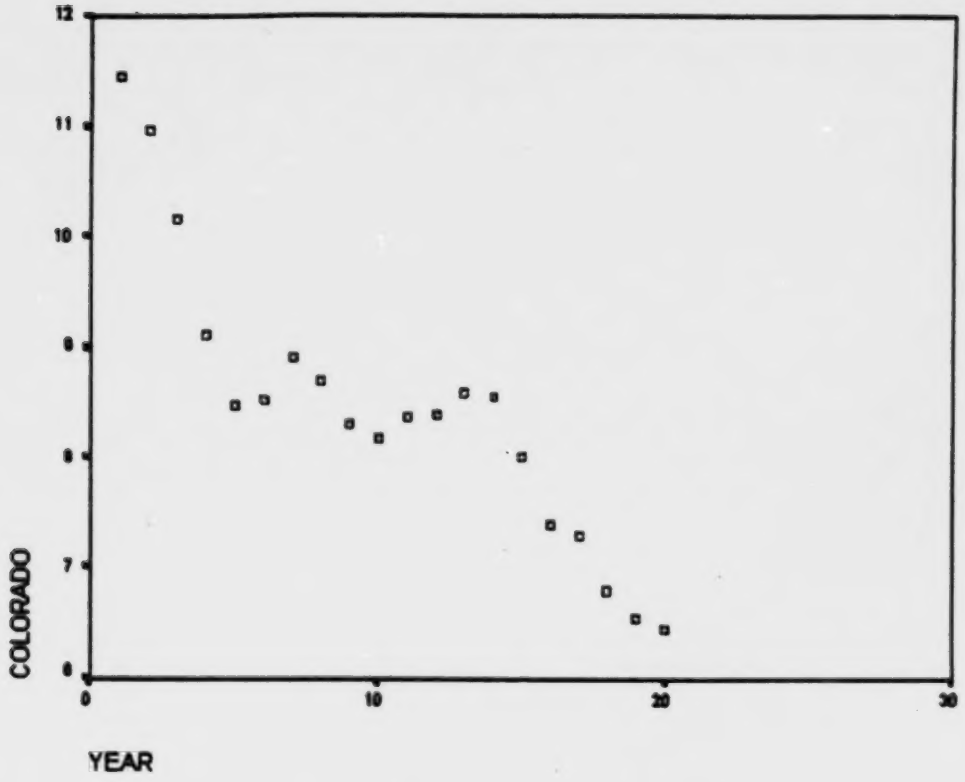

Figure 9. An example of a *Group 6* state pertaining to trends in per capita higher education appropriations relative to per capita personal income over time (1977 to 1996) relative to RQ2.
(Example: *Colorado*. Indices include: Ratio of per capita appropriations to per capita personal income on the y axis; time on the x axis)

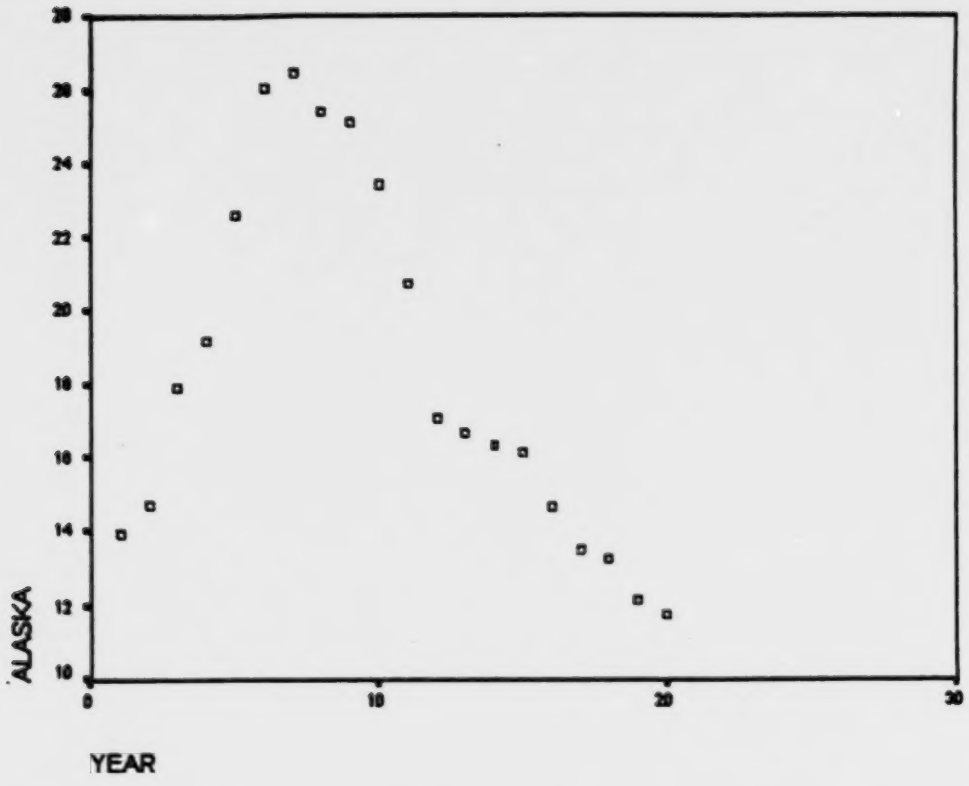

Figure 10. An example of a *Group 7* state pertaining to trends in per capita higher education appropriations relative to per capita personal income over time (1977 to 1996) relative to RQ2.
(Example: *Alaska*. Indices include: Ratio of per capita appropriations to per capita personal income on the y axis; time on the x axis)

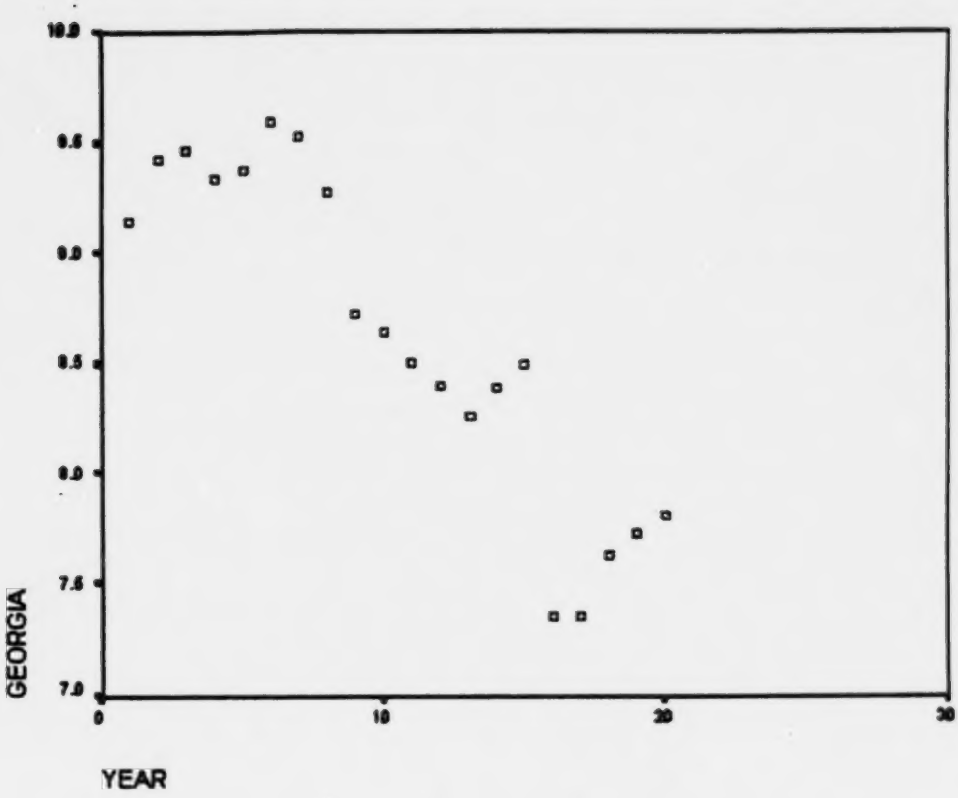

Figure 11. An example of a *Group 8* state pertaining to trends in per capita higher education appropriations relative to per capita personal income over time (1977 to 1996) relative to RQ2.
(Example: *Georgia*. Indices include: Ratio of per capita appropriations to per capita personal income on the y axis; time on the x axis)

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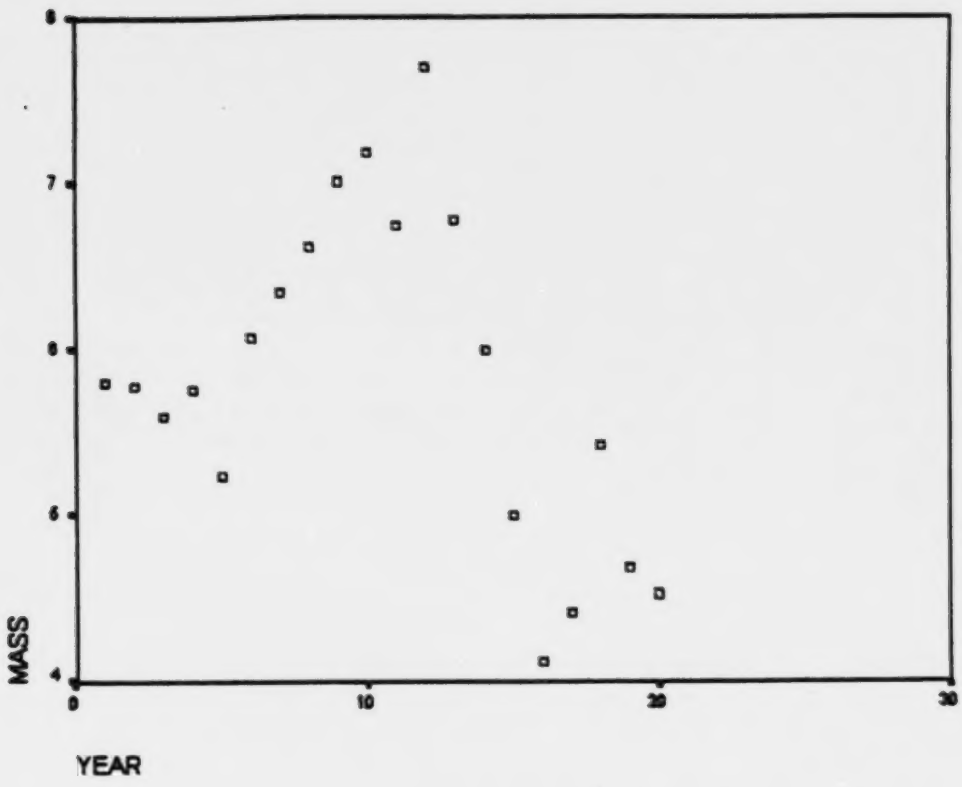

Figure 12. An example of a *Group 9* state pertaining to trends in per capita higher education appropriations relative to per capita personal income over time (1977 to 1996) relative to RQ2.
(Example: *Massachusetts*. Indices include: Ratio of per capita appropriations to per capita personal income on the y axis; time on the x axis)

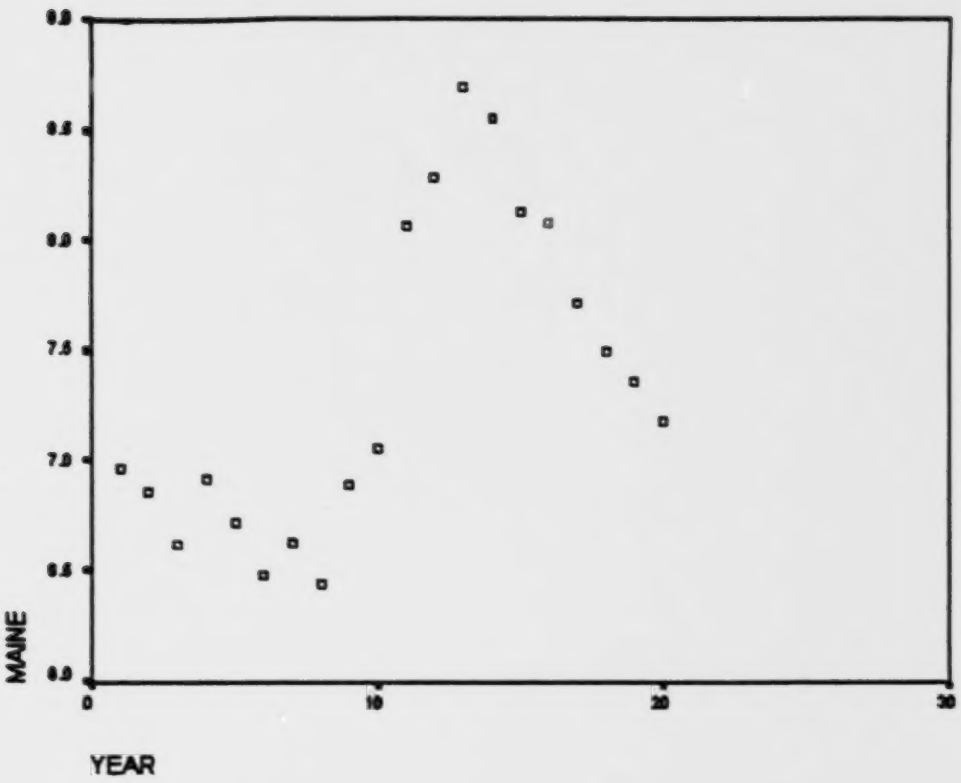

Figure 13. An example of a *Group 10* state pertaining to trends in per capita higher education appropriations relative to per capita personal income over time (1977 to 1996) relative to RQ2.
(Example: *Maine*. Indices include: Ratio of per capita appropriations to per capita personal income on the y axis; time on the x axis)

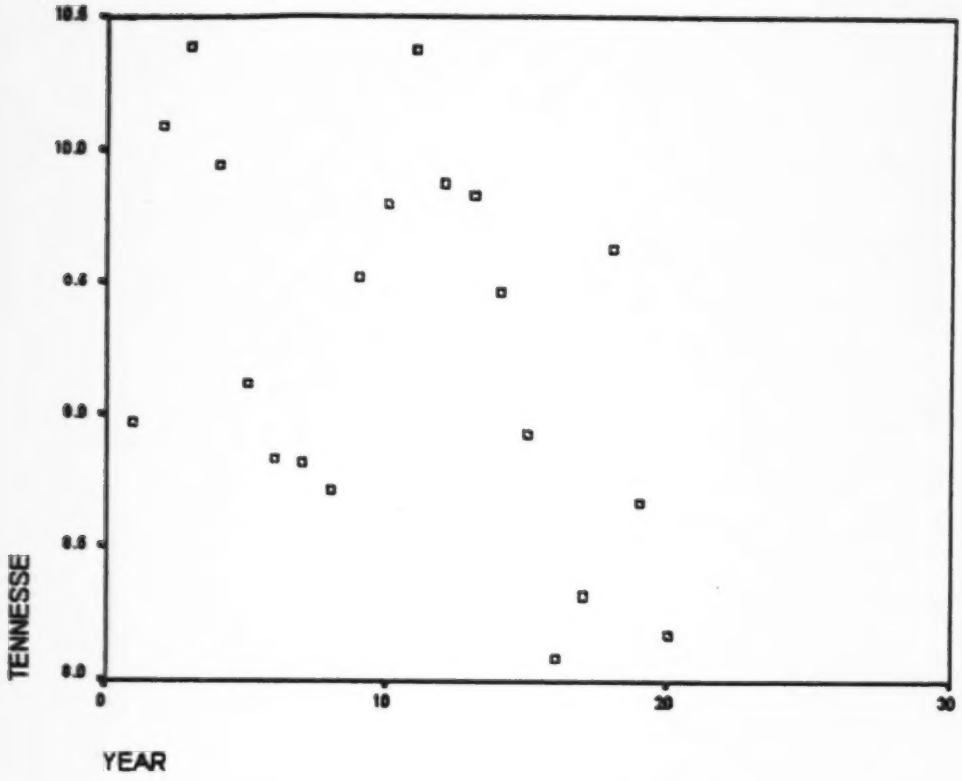

Figure 14. An example of a *Group 11* state pertaining to trends in per capita higher education appropriations relative to per capita personal income over time (1977 to 1996) relative to RQ2.
(Example: *Tennessee*. Indices include: Ratio of per capita appropriations to per capita personal income on the y axis; time on the x axis)

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Research Question 3.

Research Question 3 (RQ3) was: *"For each state, what are the trends in higher education appropriations relative to full-time equivalent (FTE) student enrollment from 1977 to 1996?"* Regarding RQ3, individual scattergrams were derived for each state with time on the x axis and the ratio of state higher education appropriations (numerator) and total state higher education student FTE enrollment (denominator) (designated as A/E) on the y axis. Furthermore, an R^2 was calculated for each state to initially determine the strength of linear relationship between the higher education appropriation/student FTE enrollment and time variables. In this research question, the state higher education appropriation (A)/student FTE enrollment (E) ratio was the dependent variable (DV), and time was the independent variable (IV). Initially, the 50 state scattergrams were categorized by individual and collective qualitative expert evaluation based on homogeneity of trend line patterns. Within this qualitative evaluation procedure, state trend lines were categorized as either *linear, logarithmic, quadratic,* or *cubic distributions.* The state trend lines were then statistically tested to determine a mathematical design "best fit" for the purpose of quantitative categorization.

From a qualitative evaluation perspective, Group 1, comprising the second largest of the four groups in RQ3, involved 13 states (26%) that had positive slope or linear-like distributions throughout or nearly all of the 20 years (Table 4). Due to this linear characteristic, these states were identified as *linear distribution states* (Figure 19). Of these 13 *linear distribution states*, nine states (69%) experienced at least one-year declines in higher education appropriations per FTE student in the early 1990s due to the national recession, but, as in RQ1, a majority rebounded to resume annual linear increases. Only one (eight percent) state, Wisconsin, was characterized by consistent annual linear increases in appropriations per FTE student throughout the 20-year period. States which were categorized as qualitative Group 1 *linear distribution states* were Arkansas, Delaware, Hawaii, Illinois, Indiana, Iowa, Kansas, Michigan, Nebraska, Nevada, Pennsylvania, South Dakota, and Wisconsin.

From a quantitative perspective involving the statistical categorization of states according to higher education appropriations per FTE student over time, only 11 (22%) were identified as linear distribution states having linear "best fit" R^2 values of .960 or greater (excluding Arkansas) (Table 5).

The statistically determined quantitative Group 1 *linear distribution states* included Arkansas, Hawaii, Illinois, Indiana, Iowa, Michigan, Nebraska, Nevada, Pennsylvania, South Dakota, and Wisconsin. Only Delaware and Kansas (subsequently statistically categorized as cubic distribution states) were absent from the original linear distribution qualitative evaluation.

Group 2, comprising the second smallest of the four qualitative evaluation groups in RQ3, included five states (10%) that had positive, near-linear slopes through the 1980s, but concluded the 20-year period with near level appropriations during the 1990s (Table 4). Of these five states, four states (80%) concluded the 20-year period with final year increases while one (20%) concluded with a final year decrease. From the qualitative evaluation perspective, these state appropriations per FTE student trend lines resembled mathematical logarithmic distributions and were identified as *logarithmic distribution states* (Figure 20).States identified as qualitative Group 2 *logarithmic distribution states* included Colorado, Louisiana, Maine, Montana, and Oklahoma. From a quantitative perspective involving the statistical categorization of states according to higher education appropriations per FTE student over time, only one state (two percent), Oklahoma, was identified as a quantitative Group 2 *logarithmic distribution state* according to its "best fit" R^2 value (Table 5).

Group 3, comprising the smallest group of qualitative evaluation states in RQ3, included three states (six percent) that reached a near linear high in higher education appropriations per FTE student, then experienced continuously declining post-peak annual appropriations per FTE student (Table 4). These designs resembled quadratic distributions and were identified as *quadratic distribution states* (Figure 21). States categorized as qualitative Group 3 *quadratic distribution states* included Alaska, Virginia, and Wyoming. Of this group of three states, two states (67%) concluded the 20-year period with post-peak increases of at least three years, while one state (33%) concluded the 20-year period with a one year post-peak increase. From a quantitative perspective involving the statistical categorization of states according to higher education appropriations per FTE student over time, only one state (two percent), Alaska, was identified as a quantitative Group 3 *quadratic distribution state* according to its "best fit" R^2 value (Table 5).

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From a qualitative perspective, Group 4 involved the largest of the four groups in RQ3 involving 29 states (58%) that reached a linear-like high in appropriations per FTE student, declined for two or more years, and then ascended toward or surpassed the previous peak (Table 4).These scattergram designs resembled cubic distributions and states included in this group were identified as *cubic distribution states* (Figure 22). States categorized as qualitative Group 4 *cubic distribution states* included Alabama, Arizona, California, Connecticut, Florida, Georgia, Idaho, Kentucky, Maryland, Massachusetts, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oregon, Rhode Island, South Carolina, Tennessee, Texas, Utah, Vermont, Washington, and West Virginia. Within qualitative Group 4, 18 states (62%) ascended past the previous peak after declining two or more years in higher education appropriations per FTE student, two states (seven percent) reached the previous peak after temporarily declining, while nine states (31%) had not reached the previous peak after temporarily declining.

From a quantitative perspective involving the statistical categorization of states according to higher education appropriations per FTE student over time, 37 states were identified as quantitative Group 4 *cubic distribution states* according to their "best fit" R^2 value (Table 5). States categorized as quantitative Group 4 cubic distribution states included Alabama, Arizona, California, Colorado. Connecticut, Delaware, Florida, Georgia, Idaho, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Minnesota, Mississippi, Missouri, Montana, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oregon, Rhode Island, South Carolina, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, and Wyoming.

Table 4

Collective Qualitative Expert Categorization of Scattergrams Depicting the Individual State Higher Education Appropriations/FTE Student Enrollment Relationship Over Time (1977 to 1996)

Linear Distributions *(13 states)*	*Logarithmic Distributions* *(3 states)*	*Quadratic Distributions* *(3 states)*	*Cubic Distributions* *(29 states)*
Arkansas	Colorado	Alaska	Alabama
Delaware	Louisiana	Virginia	Arizona
Hawaii	Maine	Wyoming	California
Illinois	Montana		Connecticut
Indiana	Oklahoma		Florida
Iowa			Georgia
Kansas			Idaho
Michigan			Kentucky
Nebraska			Maryland
Nevada			Massachusetts
Pennsylvania			Minnesota
South Dakota			Mississippi
Wisconsin			Missouri
			New Hampshire
			New Jersey
			New Mexico
			New York
			North Carolina
			North Dakota
			Ohio
			Oregon
			Rhode Island
			South Carolina
			Tennessee
			Texas
			Utah
			Vermont
			Washington
			West Virginia

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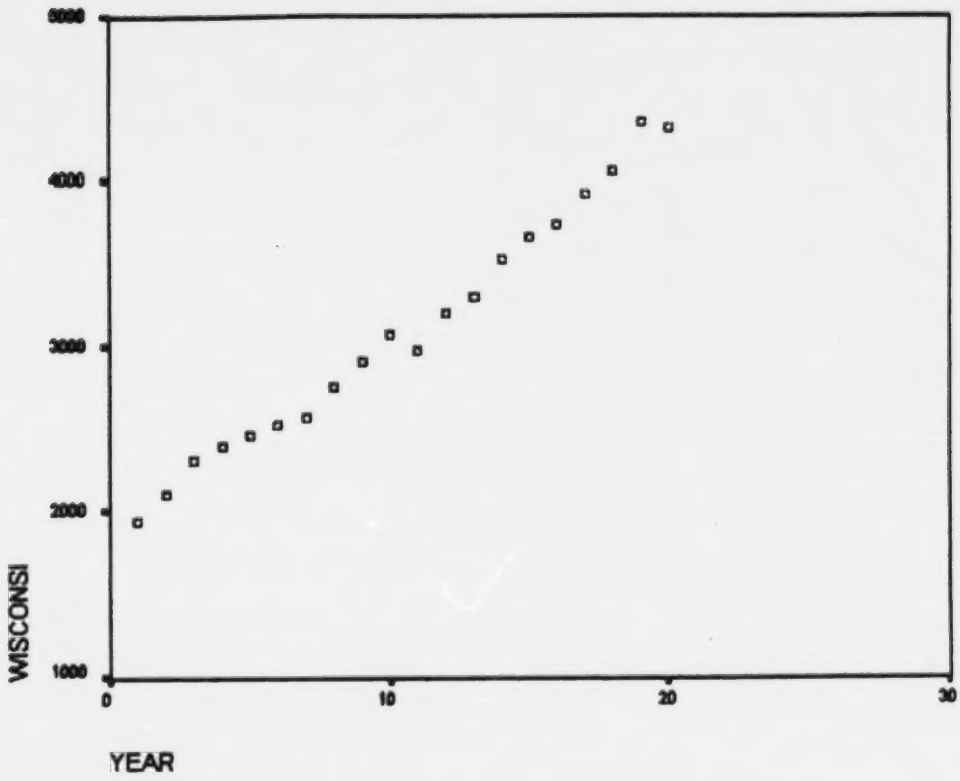

Figure 15. An example of a ***linear distribution*** scattergram (R^2=.986) pertaining to trends in appropriations per FTE student over time (1977 to 1996) relative to RQ3. (Example: *Wisconsin*. Indices include: Dollars on the y axis; time on the x axis)

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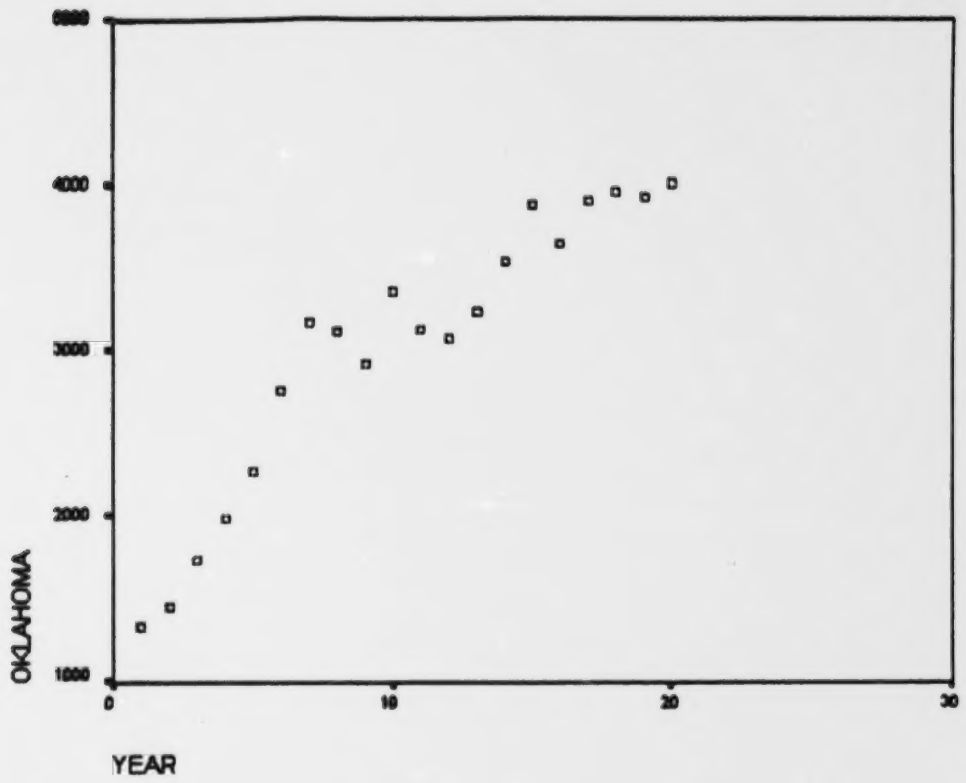

Figure 16. An example of a ***logarithmic distribution*** scattergram (R^2=.931) pertaining to trends in appropriations per FTE student over time (1977 to 1996) relative to RQ3. (Example: *Oklahoma*. Indices include: Dollars on the y axis; time on the x axis)

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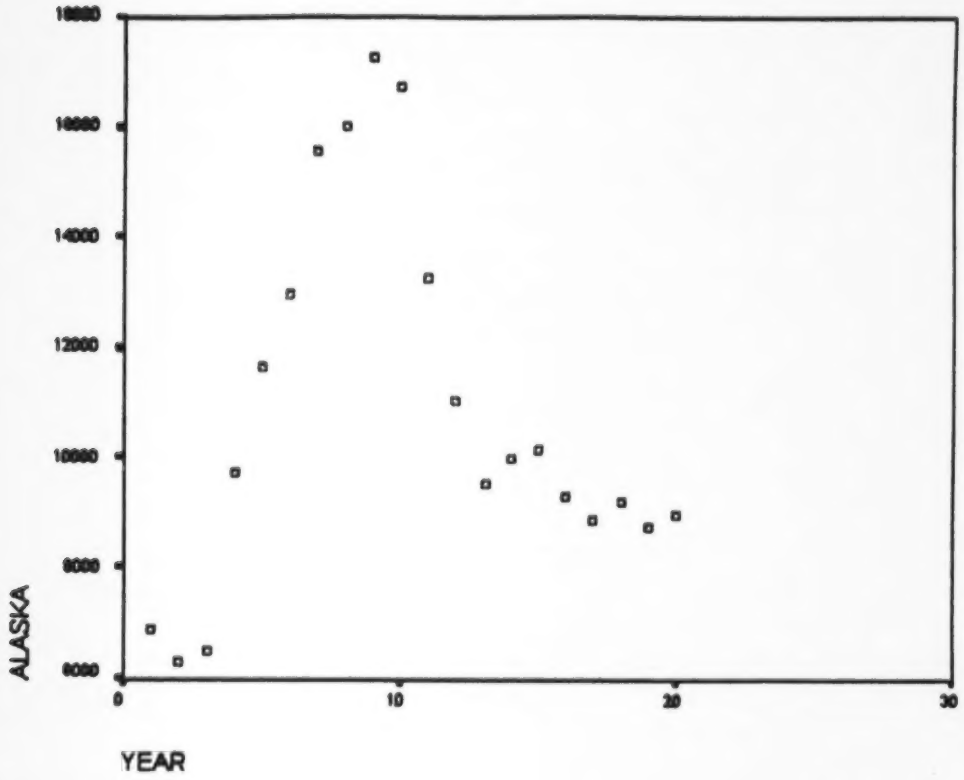

Figure 17. An example of a ***quadratic distribution*** scattergram (R^2=.557) pertaining to trends in appropriations per FTE student over time (1977 to 1996) relative toRQ3. (Example: *Alaska*. Indices include: Dollars on y axis; time on the x axis)

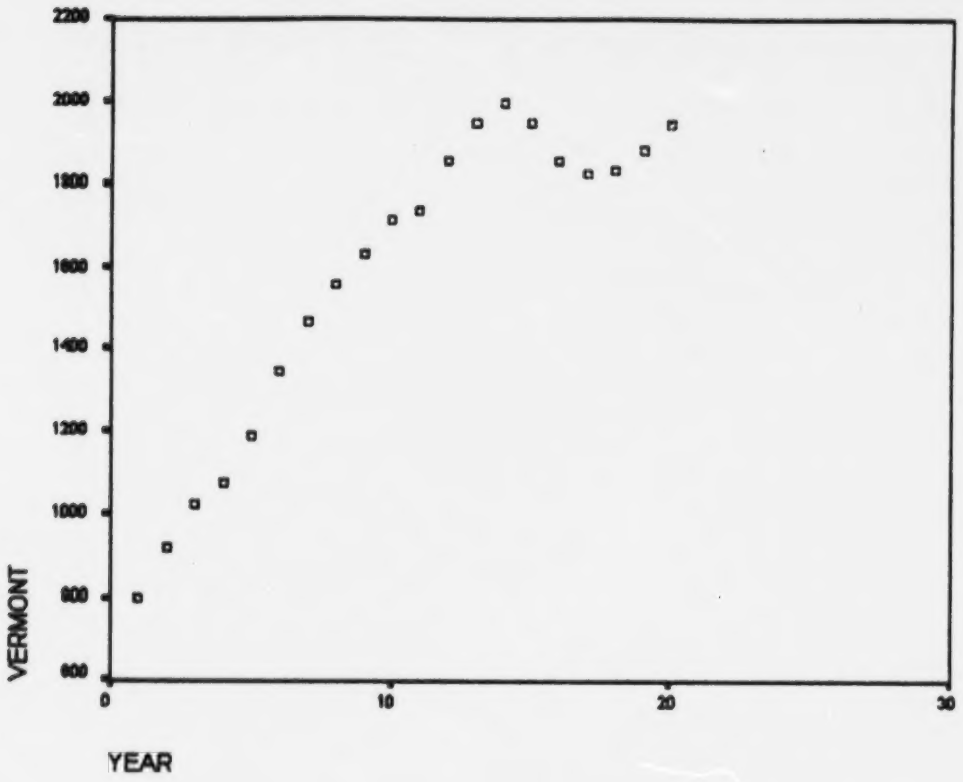

Figure 18. An example of a *cubic distribution* scattergram (R^2=.978) pertaining to trends in appropriations per FTE student over time (1977 to 1996) relative to RQ3. (Example: *Vermont*. Indices include: Dollars on the y axis; time on the x axis)

Research Question 4.

Research Question 4 (RQ4) was: *"For 43 of the 50 states, what are the differences in per capita higher education appropriation percent changes among the four predominant groups of higher education governance structures from 1997 to 1996?"* Regarding the governance groups investigated in this study, the McGuinness, Epper, and Arredondo (1994) typology was utilized to appropriately categorize states.

Regarding RQ4, an analysis of variance was performed in order to determine the differences among the governance groups relative to percent changes in per capita higher education appropriations between FY1977 and FY1996. Table 6 contains an analysis of variance summary pertaining to governance group differences relative to 20-year per capita higher education appropriation percent change. Table 7 contains means and other statistics concerning governance group differences pertaining to 20-year per capita higher education appropriation percent change. The differences among the governance group means was nonsignificant, $p = .11$. The nonsignificant F value does not permit a strong statistical inference concerning differences in the four governance groups relative to percent changes in per capita higher education appropriations from FY1977 to FY1996. However, in a descriptive sense, there was a notably higher mean percentage change in Group 3 (RCB states with consolidated or aggregate budget responsibilities) compared to the other groups, as well as notable differences among the four group means.

Furthermore, an analysis of covariance was performed to determine if there were differences among the governance groups relative to 20-year percent changes in per capita higher education appropriations controlling for changes in per capita personal income during the same period of time. Table 8 contains the analysis of covariance summary on RQ4, while Table 9 contains a summary of the unadjusted means and adjusted means controlling for the covariates. The differences among the governance groups adjusted means was nonsignificant, $p = .24$. The nonsignificant F value does not permit a strong statistical inference about differences in the four groups of higher education governance relative to 20-year percent changes in per capita higher education appropriations controlling for percent changes in per capita personal income during the same period of time.

However, the adjusted mean for Group 3 remained notably higher than those of the remaining three groups. From a descriptive perspective, Group 3 states (those having regulatory coordinating boards with consolidated or aggregate budget responsibilities) experienced a 19.4% greater per capita higher education appropriation 20-year gain in comparison to the group mean, while each remaining group failed to achieve the adjusted group mean percent increase. Although there existed wide variation in 20-year percent change in per capita higher education appropriations between as well as within the four governance groups, several plausible explanations could be made for the notable Group 3 increase. First, the increase could be attributed to the presence of greater degrees of institutional and/or system autonomy provided by RCB states. This could be especially true of institutions or systems that have successfully emphasized "strategic planning and proactive management procedures in response to a changing environment" providing them with "a stronger sense of identity and purpose" (El-Khawas and Knoop, 1996, p. 5). Furthermore, the efficient functioning of the RCB' "suitable sensitive mechanism" (Berdahl, 1971) may also have effectively buffered excessive involvement by state governments in institutional matters thereby enabling campus executives and their faculties greater opportunities to address their campus missions.

Other potential explanations or combination of reasons for Group 3 RCB states having notably higher 20-year percent increases in capita higher education appropriations than the other groups could involve certain important state differences. These differences may include such critical areas as cost-of-living indices, the presence or absence of dynamic industrial economies, the fact that some state higher education systems were in building rather than maintenance modes, the presence of new higher education campus' program initiatives versus those maintaining a status quo existence, and the presence of growing versus stabilized or decreased enrollments.

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Table 6

Analysis of Variance Summary Concerning Governance Group Differences Relative to Percent Changes in Per Capita Higher Education Appropriations from 1977 to 1996 (N=43)

Source	*SS*	*df*	*MS*	*F*	*p*
Between groups	15577.7	3	5192.6	2.15	.11
Within groups	94035.3	39	2411.2		
Total	109613.0	42			

Table 7

Means and Other Statistics Concerning Governance Group Differences Relative to Percent Changes in Per Capita Higher Education Appropriations from 1977 to 1996 (N = 43)

Group	*n*	*M*	*SD*
1	10	159.54	53.83
2	13	177.10	54.06
3	9	213.90	39.75
4	11	170.58	44.99

Table 8

Analysis of Covariance Summary Concerning Governance Group Differences Relative to Percent Changes in Per Capita Higher Education Appropriations Controlling for Percent Changes in Per Capita Personal Income from 1977 to 1996 (N=43)

Source	*SS*	*df*	*MS*	*F*	*p*
Covariate	20739.1	1	20739.1	9.90	.00
Main effects	9264.9	3	3088.3	1.47	.24
Residual	79609.0	38	2095.0		

Table 9

Unadjusted and Adjusted Means Concerning Governance Group Differences Relative to Percent Changes in Per Capita Higher Education Appropriations from 1977 to 1996 (Adjusted for Covariate [N=43])

Group	*n*	*Unadjusted M*	*Adjusted M*
1	10	159.54	173.97
2	13	177.10	175.27
3	9	213.90	206.81
4	11	170.58	165.43

Research Question 5.

Research Question 5 (RQ5) was: *"What are the differences in per capita higher education appropriations among the six types of K-12 litigation decisions from 1977 to 1996?"* Relative to categorizing the groups of K-12 litigation states, the *'Status of School Finance Constitutional Litigation'* typology devised by Hickrod, Lenz, and Minorini (1996) was used. The six litigation groups within the typology were categorized in the following manner:

> *Group 1* states in which the plaintiffs won at the state supreme court level; *Group 2* in which the plaintiffs won at the state supreme court level, but further compliance litigation was also filed; *Group 3* in which the plaintiffs lost at the state supreme court level and there has been no further complaints filed or further complaint lost also; *Group 4* in which the plaintiffs lost at the state supreme court level, but there have been further complaints filed; *Group 5* in which litigation is present, but, no state supreme court decision has been rendered; and *Group 6* in which no litigation is present or the case is dormant.
> (Hickrod, Lenz, and Minorini, 1996)

Regarding RQ5, an analysis of variance was performed in order to determine the differences among the litigation groups relative to percent changes in per capita higher education appropriations from FY1977 to FY1996. Table 10 contains an analysis of variance summary pertaining to litigation group differences relative to 20-year per capita higher education appropriation percent change. Table 11 contains means and other statistics pertaining to litigation group differences relative to 20-year per capita higher education appropriation percent changes. The differences among the litigation group means was nonsignificant, $p = .82$. The nonsignificant F value does not permit a strong statistical inference concerning differences in the K-12 litigation groups relative to percent changes in per capita higher education appropriations between FY1977 and FY1996. However, there were notably higher mean percent changes in per capita higher education appropriations in Group 1 (in which the plaintiffs won at the Supreme Court level) and Group 6 (in which no litigation is present or the case is dormant), while Group 3 (in which plaintiffs lost at the Supreme Court level and there has been no further complaints filed or further complaint lost also) had the second lowest mean percent change.

Additionally, an analysis of covariance was performed to determine if there were differences among the litigation groups relative to 20-year percent changes in per capita higher education appropriations controlling for percent changes in per capita personal income during the same time period. Table 12 contains an analysis of covariance summary for RQ5, while Table 13 contains the unadjusted and adjusted means controlling for the covariates. The differences among the litigation group adjusted means was nonsignificant, $p = .76$. The nonsignificant F does not permit a strong inference about litigation group differences relative to 20-year percent changes in per capita higher education appropriations controlling for percent changes in per capita personal income during the same period of time. However, the higher adjusted predicted means (Table 13) for Groups 1 and 2 (plaintiff winners) in

comparison to Groups 3 and 4 (plaintiff losers) helps to verify the Hickrod et al (1992) contention that "when K-12 wins, it can carry the entire state educational budget with it" (p. 203).

Furthermore, to gain insight into the relationship of *immediate* (two years post-decision) and *short-term* (five years post-decision) differences in percent changes in per capita higher education appropriations between the litigation winners (Groups 1 and 2) and losers (Groups 3 and 4), two analyses of variance were performed relative to the states in the two collective groups whose litigation decisions occurred at least five years prior to 1996 (10 states comprised Groups 1 and 2, 13 states comprised Groups 3 and 4). Table 14 contains the analysis of variance summary for the *immediate differences* in percent changes in per capita higher education appropriations between the litigation winners and losers, while Table 15 contains the analysis of variance summary for the *short-term differences* between the litigation winners and losers. The *immediate difference* between the means of the litigation winners and losers was significant, $p < .05$, M(winners) = 41.8 (percent change in per capita higher education appropriations), M(losers) = 24.9 (percent change in per capita higher education appropriations). The *short-term difference* between the means of the litigation winners and losers was nonsignificant, $p = .20$. The significant F permits a strong inference about the difference in percent change in per capita higher education appropriations in that plaintiff winner states experienced greater *immediate* increases in per capita higher education appropriations than did plaintiff loser' states. However, the nonsignificant F relative to the short-term differences between litigation winners and losers does not permit a strong inference about difference in percent change in per capita higher education appropriations between plaintiff winner and plaintiff loser states over five years. In summary, the results of this study support a point of view that plaintiff victories in K-12 litigation at the state supreme court can result in greater percent changes in per capita higher education appropriations and therefore positively influence the entire state higher education budget.

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Table 10

Analysis of Variance Summary Concerning Litigation Group Differences Relative to Percent Changes in Per Capita Higher Education Appropriations from 1977 to 1996 (N=50)

Source	*SS*	*df*	*MS*	*F*	*p*
Between groups	6333.8	5	1266.8	.44	.82
Within groups	127141.0	44	2889.6		
Total	133475.0	49			

Table 11

Means and Other Statistics Concerning Litigation Group Differences Relative to Percent Changes in Per Capita Higher Education Appropriations from 1977 to 1996 (N=50)

Group	*n*	*M*	*SD*
1	10	190.66	57.19
2	4	160.12	66.39
3	13	166.96	50.48
4	6	176.35	43.33
5	8	172.95	63.13
6	9	191.55	45.59

Table 12

Analysis of Covariance Summary Concerning Litigation Group Differences Relative to Percent Changes in Per Capita Higher Education Appropriations Controlling for Percent Changes in Per Capita Personal Income from 1977 to 1996 (N=50)

Source	*SS*	*df*	*MS*	*F*	*p*
Covariates	19361.4	1	19361.4	7.74	.01
Main effects	6474.9	5	1295.0	.52	.76
Residual	107638.0	43	2503.2		

Table 13

Unadjusted and Adjusted Means Concerning Litigation Group Differences Relative to Percent Changes in Per Capita Higher Education Appropriations from 1977 to 1996 (Adjusted for Covariate [N=50])

Group	*n*	*Unadjusted M*	*Adjusted M*
1	10	190.66	177.34
2	4	160.12	174.23
3	13	166.96	167.95
4	6	176.35	166.13
5	8	172.95	178.76
6	9	191.55	200.29

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Table 14

Analysis of Variance Summary Concerning *Immediate* (Two Years Post-Decision) *Differences* Between Litigation Winners and Losers Relative to Percent Changes in Per Capita Higher Education Appropriations (N=23)

Source	*SS*	*df*	*MS*	*F*	*p*
Between groups	1617.1	1	1617.1	4.43	.05*
Within groups	7658.3	21	364.7		
Total	9275.4	22			

Note: * The actual p value was .047; hence, the F value was significant, $p<.05$

Table 15

Analysis of Variance Summary Concerning *Short-Term* (Five Years Post-Decision) *Differences* Between Litigation Winners and Losers Relative to Percent Changes in Per Capita Higher Education Appropriations (N=23)

Source	*SS*	*df*	*MS*	*F*	*p*
Between groups	1652.2	1	1652.2	1.78	.20
Within groups	19565.4	21	931.7		
Total	21217.6	22			

Discussion

In RQ1, 48 states (96%) were statistically found to have linear (20 states) or cubic (28 states) distributions of per capita higher education appropriations from 1977 to 1996. This finding verified the belief of many educational researchers that the ultimate decision on bottom-line annual state higher education appropriations is frequently the result of gubernatorial and legislative compromise ultimately resulting in incremental increases that keep pace with inflation. Halstead (1993, p. 10) clarified this 'incrementalism' concept by stating that the "financing of higher education is more a matter of historical precedent tempered by current politics than dependent on inherent state conditions (with the possible exception of the few poorest states in the union)." Furthermore, because trends in per capita higher

education appropriations in this study were analyzed in real dollars cushioned by inflation, it was reasonable to anticipate linear or near-linear distributions in a majority of the state cases. The high incidence of cubic distributions can be attributed to the early 1990s national recession that caused temporary fiscal difficulties for higher education and has been described as "higher education's bleak years in state government support" (Hines & Pruyne, 1995, p. 1). However, these cubic distribution states subsequently rebounded in the mid-1990s with many experiencing moderate to substantial increases in higher education appropriations during the past three years. However, concern can be expressed for the two quadratic distribution states (Alaska and Montana) that previously reached peak points in per capita higher education appropriations only to experience steady recent downward declines. This finding reveals case studies worthy of further review.

The results of RQ2 were both disturbing as well as the hopeful harbinger of an important message to higher education. Noting that only six states (Arkansas, Iowa, New Mexico, Ohio, Oklahoma, and Wyoming) experienced positive slope trend lines related to the 20-year relationship of per capita higher education appropriations to per capita personal income specifically addresses the need for higher education to continue its reexamination of mission and purpose and to halt the on-going erosion of public attitudes about and its misunderstanding of higher education. Specifically, several of these higher education problems have be identified as the lack of quantifiable educational outcomes, student attrition, inadequate entrance standards, incoherent curricula, a lack of affordability, insufficient productivity, excessive internal conflict, lack of quality control by the academy as well as a general non-responsiveness of higher education to its varied constituents (Finn, 1990; Hines & Pruyne, 1995).

The results of the statistical analysis of RQ3 scattergrams related to appropriations per FTE student over 20 years in many respects mirrored the predominate linear and cubic distributions found in RQ1. In RQ3, 49 states (98%) were statistically found to have linear (11 states), logarithmic (one state) or cubic (37 states) positive-slope distributions. As was the case in RQ1, the early 1990s national recession accounted for a majority of the cubic distributions. In Campus Trends 1996, El-Khawas and Knopp (1996) reported that nearly 80% of colleges and universities had increased their overall enrollments since 1985-86 and that about 75% of all public four-year institutions experienced enrollment growth during that

same time period. This evidence supports the Leslie and Ramey (1986) contention that if enrollments continue to increase, state higher education funding will follow suit. Furthermore, as was the case in RQ1, the lone quadratic distribution state (Alaska) presents the possibility of an interesting case study.

Despite the nonsignificance of RQ4 governance group results ($p>.05$) due mainly to high intragroup variance, there are several important descriptive implications that can be made. First, the notable difference in 20-year percent changes in per capita appropriations between Group 3 RCB states and the other governance groups points favorably to the nine RCB states having established effective, loosely-coupled relationships with state government. It can also be postulated that Group 3 RCBs appear to be effective in integrating the desirable aspects of institutional and/or system autonomy while at the same time successfully communicating higher education needs to state government that resulted in greater percent increases in per capita higher education appropriations over time. A descriptive evaluation of RQ4 results further reinforces the McGuinness et al (1994) contention that "a coordinating board's power and influence...is related less to its formal authority than to its position of respect and to its reputation for objective, fair and open policymaking" (p. 6). Furthermore, in support of the RCBs acting as "suitable sensitive mechanisms" (Berdahl, 1971), the Carnegie Commission on Higher Education (1974) indicated that "reasonable decentralization [of higher education governance] within systems and large campuses can accelerate and personalize the making of many decisions, while strong centralization of authority can delay decisions and make them less responsive to specific problems" (p. 166). The benefits of Group 3 RCB autonomy and greater responsiveness has been substantiated by the descriptive results in RQ3.

Furthermore, Group 1 CGBs had the second lowest adjusted mean percent increases in per capita appropriations when compared to the other governance groups. This might indicate that consolidated governing board control of all senior and two-year higher education institutions appears to lessen institutional autonomy and self-responsibility by exerting greater control of higher education fiscal resources and their allocation as well as by implementing controlling policy strategies. Historically, the stronger the ties of state government with higher education vis-à-vis consolidated governing board control, the greater the possibility that the consistent growth of state higher education appropriations can be slowed by a state's fiscal concentration in its other, seemingly more needy responsibilities such as K-12

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education, public welfare aid, prison system development, and highway system improvements. However, it would be irresponsible to make sweeping generalities about the inadequacies of consolidated governing boards, as the CGBs in this study represent smaller higher education budget states with less complex systems and smaller aggregate enrollments.

Regarding RQ5, despite the statistical nonsignificance of the 20-year K-12 litigation group results ($p>.05$), several important descriptive implications can be made. First, some critics contend that successful K-12 litigation will subsequently reduce postsecondary education funding. The descriptive results of this study help to disprove this contention and affirm an earlier Hickrod et al (1992) finding that K-12 litigation plaintiff victories can positively carry the entire state educational budget. In this study, litigation Groups 1 and 2 (plaintiff winners) realized a collective adjusted (mathematical not weighted) predicted mean of 175.79 (percent increase in per capita higher education appropriations) compared to the Groups 3 and 4 (plaintiff losers) adjusted predicted mean of 167.04. This result indicates that plaintiff victories in K-12 litigation cases result in nearly a nine percent increase in per capita higher education appropriations when controlling for personal income over the 20-year time period of this study.

Additionally, the significant statistical result realized by comparing the immediate differences of litigation winners and losers helps place quantitative parameters on the benefits of successful K-12 litigation to higher education funding. In reviewing the descriptive statistics in this research question, even the contesting of K-12 funding heightens gubernatorial and legislative awareness throughout all levels of education and subsequently positively impacts higher education appropriations.

Concluding Observations

There are three important observations that can be reported from this study of trends in interstate higher education finance from 1977 to 1996.

1. *The most critical and alarming observation in the study was the decline in effort by a majority of states to fund higher education although most had increased state revenues relative to per capita personal income*. This observation indicates two potential scenarios worthy of further discussion. First, the contention of many in higher education that other state responsibilities including elementary and secondary education funding, public welfare aid, prison system development, and highway system

improvements have exerted increasing influence over the allocation of annual state tax appropriations is apparently valid. Proof of higher education becoming a secondary state responsibility was substantiated in this study by the preponderance of linear and near-linear incremental increases of per capita higher education appropriations and appropriations per FTE student indicative of funding keeping pace with inflation. Unfortunately, these state budget constraints place the opportunities of citizens from diverse backgrounds to partake in educational benefits beyond K-12 in a tenuous position because the executive and legislative branches of state government deem (based on past funding patterns) that other state responsibilities are of greater importance than postsecondary education. This contention leads directly to the second scenario. With continued demands by state government and public decries to increase the participation of underrepresented groups in higher education, a finding in this study that indicated appropriations per FTE student over time have been incremental and not substantially increasing to meet current trends also verifies that higher education is a secondary state responsibility. El-Khawas and Knopp (1996) reported that nearly 80% of colleges and universities had increased their overall enrollments since 1985-86, with about 40% had increased their enrollments in 1996. Furthermore, about 75% of all public four-year institutions experienced enrollment growth during that same time period. El-Khawas and Knopp (1996) also indicated that 77% of the colleges and universities in the Campus Trends 1996 survey "reflect more racial/ethnic diversity today than they did ten years ago. About one-third [of the reporting institutions] cited this diversity as one of the greatest changes affecting students during the last decade" (p. 20). With an increase in student diversity coupled with many institutions failing to keep up with the latest technological advances and many working with smaller faculties, state government must make a concerted effort to more substantially fund higher education to keep pace with current demographic and educational delivery trends.

2. *Another important observation in this study is the apparent fiscal benefit realized by states having regulatory coordinating boards with consolidated or aggregated budget responsibilities (Group 3 RCBs of the postsecondary governance structures) relative to receiving greater percent increases in per capita higher education appropriations over time than the remaining three groups of governance structures.* The notable difference in 20-year changes in per capita higher education appropriations

between Group 3 RCB states and the other governance groups points to several noteworthy Group 3 regulatory coordinating board characteristics. First, Group 3 RCBs appear to be effective in integrating the desirable aspects of institutional and/or system autonomy while also successfully communicating the needs of postsecondary education to state government. This ability typically results in greater percent increases in per capita higher education appropriations over time. Another favorable characteristic is that Group 3 RCBs' "power and influence is related less to its formal authority than to its position of respect and to its reputation for objective, fair and open policymaking" (McGuinness et al, 1994, p. 6). Furthermore, in support of Group 3 RCBs acting as "suitable sensitive mechanisms" (Berdahl, 1971), it also appears they successfully negotiate the delicate balance between systems decentralization and the acceleration of decision making processes that promotes greater responsiveness to specific problems (Carnegie Commission on Higher Education, 1974). The results of this study suggest that Group 3 RCBs maintain an effective balance position between state government and higher education institutions that enables them to conduct independent performance evaluations than can lead to appropriate policy adjustments and improved educational outcomes.

3. *The last key observation in this study is that the ability of states to make public elementary and secondary education more fiscally equitable has a positive influence on higher education funding.* Proof of successful K-12 equity litigation benefiting higher education was realized by the descriptive result (RQ5) of plaintiff winner' states experiencing an eight and three-fourths percent 20-year increase of per capita higher education appropriations over plaintiff loser' states. Furthermore, plaintiff winner' states experienced a significant 16.9% greater two year post-decision increase in per capita higher education appropriations than did plaintiff loser' states. The current demands placed on elementary and secondary education to provide quality education that will help to alleviate social problems such as unemployment and crime cannot be solved solely by an outpouring of dollars, but can be assisted by providing greater resources, improving instructional technology, and achieving greater teacher commitment to student success. Heightened awareness of improved K-12 education by state government and the public can be beneficial to accommodating the demands of higher education to be fiscally compensated for its needs in providing additional education and training for its citizens. True to the axiom that "the squeaky wheel

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gets the grease," if public education improves as a result of equity litigation, more substantial higher education funding increases will result.

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